



Australian Government

UEP Electricity Supply Industry - Generation Sector Training Package

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CONTENTS

UEP20122 Certificate II in ESI Generation - Operations Support	23
UEP20222 Certificate II in Remote Area Essential Service	28
UEP30322 Certificate III in ESI Generation	39
UEP40122 Certificate IV in ESI Generation	47
UEP40322 Certificate IV in ESI Generation Maintenance - Electrical Electronics	56
UEP40422 Certificate IV in ESI Generation Maintenance (Fabrication)	74
UEP40522 Certificate IV in ESI Generation Maintenance (Mechanical)	89
UEP40622 Certificate IV in Wind Power Generation	109
UEP50122 Diploma of ESI Generation	113
UEPSS00013 Co-ordinate Real-Time Offshore Operations Skill Set	123
UEPSS00014 Managing Network Communications Skill Set	125
UEPSS00015 Managing Site Outages Skill Set	127
UEPMNT001 Carry out routine work activities in an electricity supply industry generation environment	129
Assessment Requirements for UEPMNT001 Carry out routine work activities in an electricity supply industry generation environment	132
UEPMNT002 Carry out routine work activities in an ESI large scale wind generation environment	134
Assessment Requirements for UEPMNT002 Carry out routine work activities in an ESI large scale wind generation environment	137
UEPMNT003 Coordinate maintenance on a wind farm	139
Assessment Requirements for UEPMNT003 Coordinate maintenance on a wind farm ...	143
UEPMNT004 Diagnose and repair faults in large scale wind turbines	145
Assessment Requirements for UEPMNT004 Diagnose and repair faults in large scale wind turbines	148
UEPMNT005 Diagnose and repair faults in wind turbine control systems	150
Assessment Requirements for UEPMNT005 Diagnose and repair faults in wind turbine control systems	154
UEPMNT006 Diagnose and repair faults in wind turbine electrical systems	157
Assessment Requirements for UEPMNT006 Diagnose and repair faults in wind turbine electrical systems	161
UEPMNT007 Diagnose and repair mechanical systems faults in wind turbines	163
Assessment Requirements for UEPMNT007 Diagnose and repair mechanical systems faults in wind turbines	166
UEPMNT008 Maintain and monitor wind farm civil assets	168
Assessment Requirements for UEPMNT008 Maintain and monitor wind farm civil assets	171
UEPMNT009 Maintain large scale wind turbines	173
Assessment Requirements for UEPMNT009 Maintain large scale wind turbines	176
UEPMNT010 Maintain wind turbine control systems	178
Assessment Requirements for UEPMNT010 Maintain wind turbine control systems	181
UEPMNT011 Maintain wind turbine electrical systems	183
Assessment Requirements for UEPMNT011 Maintain wind turbine electrical systems ...	187
UEPMNT012 Maintain wind turbine mechanical systems	189
Assessment Requirements for UEPMNT012 Maintain wind turbine mechanical systems	192
UEPMNT013 Monitor climatic conditions for renewable electricity generation	194
Assessment Requirements for UEPMNT013 Monitor climatic conditions for renewable electricity generation	197
UEPMNT014 Test and commission wind turbines	199
Assessment Requirements for UEPMNT014 Test and commission wind turbines	203

UEPOPL003 Licence to operate a reciprocating steam engine	205
Assessment Requirements for UEPOPL003 Licence to operate a reciprocating steam engine	212
UEPOPL004 Licence to operate a steam turbine.....	215
Assessment Requirements for UEPOPL004 Licence to operate a steam turbine	223
UEPOPS001 Analyse single protection device operation	226
Assessment Requirements for UEPOPS001 Analyse single protection device operation..	229
UEPOPS002 Apply environmental and sustainable energy procedures.....	231
Assessment Requirements for UEPOPS002 Apply environmental and sustainable energy procedures	234
UEPOPS003 Apply quality systems to work	236
Assessment Requirements for UEPOPS003 Apply quality systems to work.....	239
UEPOPS004 Carry out operational checks on in-service electrical plant	241
Assessment Requirements for UEPOPS004 Carry out operational checks on in-service electrical plant.....	244
UEPOPS005 Clean plant and equipment	246
Assessment Requirements for UEPOPS005 Clean plant and equipment.....	249
UEPOPS006 Collect and analyse hydrological and meteorological data.....	252
Assessment Requirements for UEPOPS006 Collect and analyse hydrological and meteorological data.....	255
UEPOPS007 Conduct chemical batching operations	257
Assessment Requirements for UEPOPS007 Conduct chemical batching operations	260
UEPOPS008 Operate and monitor control room site in a multi-function environment ...	262
Assessment Requirements for UEPOPS008 Operate and monitor control room site in a multi-function environment.....	265
UEPOPS009 Conduct minor electrical maintenance.....	268
Assessment Requirements for UEPOPS009 Conduct minor electrical maintenance	271
UEPOPS010 Conduct minor mechanical maintenance	273
Assessment Requirements for UEPOPS010 Conduct minor mechanical maintenance	276
UEPOPS011 Conduct multiple energy source isolation procedures for permit to work ..	278
Assessment Requirements for UEPOPS011 Conduct multiple energy source isolation procedures for permit to work	281
UEPOPS012 Conduct non-routine operational testing	283
Assessment Requirements for UEPOPS012 Conduct non-routine operational testing.....	286
UEPOPS013 Conduct operational checks and carry out corrective action on in-service electrical plant.....	288
Assessment Requirements for UEPOPS013 Conduct operational checks and carry out corrective action on in-service electrical plant.....	292
UEPOPS014 Conduct operational checks on in-service mechanical plant.....	294
Assessment Requirements for UEPOPS014 Conduct operational checks on in-service mechanical plant	297
UEPOPS015 Conduct project management	299
Assessment Requirements for UEPOPS015 Conduct project management.....	303
UEPOPS016 Conduct routine wind turbine maintenance	305
Assessment Requirements for UEPOPS016 Conduct routine wind turbine maintenance	308
UEPOPS017 Conduct single energy source isolation procedures for permit to work.....	310
Assessment Requirements for UEPOPS017 Conduct single energy source isolation procedures for permit to work	313
UEPOPS018 Conduct water conveyance and control	316
Assessment Requirements for UEPOPS018 Conduct water conveyance and control	319
UEPOPS019 Control electrical energy production.....	321
Assessment Requirements for UEPOPS019 Control electrical energy production	324
UEPOPS020 Control hydro generation pumping	326

Assessment Requirements for UEPOPS020 Control hydro generation pumping.....	329
UEPOPS021 Control permit to work operations.....	331
Assessment Requirements for UEPOPS021 Control permit to work operations.....	334
UEPOPS022 Coordinate and direct switching program	336
Assessment Requirements for UEPOPS022 Coordinate and direct switching program...	340
UEPOPS023 Coordinate electrical energy production.....	343
Assessment Requirements for UEPOPS023 Coordinate electrical energy production	347
UEPOPS024 Coordinate first response team operation.....	350
Assessment Requirements for UEPOPS024 Coordinate first response team operation	354
UEPOPS025 Coordinate local H.V. networks.....	356
Assessment Requirements for UEPOPS025 Coordinate local H.V. networks	360
UEPOPS026 Coordinate network/system.....	362
Assessment Requirements for UEPOPS026 Coordinate network/system	366
UEPOPS027 Coordinate operational strategies for power production	368
Assessment Requirements for UEPOPS027 Coordinate operational strategies for power production	371
UEPOPS028 Coordinate permit to work system	373
Assessment Requirements for UEPOPS028 Coordinate permit to work system	376
UEPOPS029 Coordinate photovoltaic solar power plant operations.....	378
Assessment Requirements for UEPOPS029 Coordinate photovoltaic solar power plant operations	382
UEPOPS030 Coordinate power generation.....	384
Assessment Requirements for UEPOPS030 Coordinate power generation	389
UEPOPS031 Coordinate response to critical incidents	392
Assessment Requirements for UEPOPS031 Coordinate response to critical incidents.....	396
UEPOPS032 Coordinate team activities	398
Assessment Requirements for UEPOPS032 Coordinate team activities.....	401
UEPOPS033 Coordinate the use of contingency plans	403
Assessment Requirements for UEPOPS033 Coordinate the use of contingency plans.....	406
UEPOPS034 Coordinate wind farm operations.....	408
Assessment Requirements for UEPOPS034 Coordinate wind farm operations	412
UEPOPS035 Coordinate workplace communication.....	414
Assessment Requirements for UEPOPS035 Coordinate workplace communication	417
UEPOPS036 Develop H.V. switching programs	419
Assessment Requirements for UEPOPS036 Develop H.V. switching programs.....	422
UEPOPS037 Ensure compliance with work health and safety policy and procedures	424
Assessment Requirements for UEPOPS037 Ensure compliance with work health and safety policy and procedures.....	427
UEPOPS038 Evaluate cost estimations and initiate appropriate solutions	429
Assessment Requirements for UEPOPS038 Evaluate cost estimations and initiate appropriate solutions.....	432
UEPOPS039 Evaluate scheduling of generation plant	434
Assessment Requirements for UEPOPS039 Evaluate scheduling of generation plant.....	438
UEPOPS040 Facilitate the use of contingency plans for power generation facilities	440
Assessment Requirements for UEPOPS040 Facilitate the use of contingency plans for power generation facilities	443
UEPOPS041 Facilitate workplace communication.....	445
Assessment Requirements for UEPOPS041 Facilitate workplace communication	447
UEPOPS042 Implement dam safety surveillance procedures	449
Assessment Requirements for UEPOPS042 Implement dam safety surveillance procedures	452
UEPOPS043 Interpret and analyse multi-operation protection devices.....	454
Assessment Requirements for UEPOPS043 Interpret and analyse multi-operation protection devices.....	457

UEPOPS044 Liaise with stakeholders.....	459
Assessment Requirements for UEPOPS044 Liaise with stakeholders	462
UEPOPS045 Maintain and utilise records.....	464
Assessment Requirements for UEPOPS045 Maintain and utilise records	467
UEPOPS046 Maintain battery banks and cells.....	469
Assessment Requirements for UEPOPS046 Maintain battery banks and cells	473
UEPOPS047 Maintain quality systems within the team.....	475
Assessment Requirements for UEPOPS047 Maintain quality systems within the team ...	478
UEPOPS048 Manage commissioning and decommissioning	480
Assessment Requirements for UEPOPS048 Manage commissioning and decommissioning	485
UEPOPS049 Manage critical incidents.....	488
Assessment Requirements for UEPOPS049 Manage critical incidents	492
UEPOPS050 Manage environmental management systems	494
Assessment Requirements for UEPOPS050 Manage environmental management systems	497
UEPOPS051 Manage first response team.....	499
Assessment Requirements for UEPOPS051 Manage first response team	502
UEPOPS052 Manage high voltage network system.....	504
Assessment Requirements for UEPOPS052 Manage high voltage network system	508
UEPOPS053 Manage operational crisis to maintain or restore power system integrity...510	
Assessment Requirements for UEPOPS053 Manage operational crisis to maintain or restore power system integrity.....	514
UEPOPS054 Manage operational strategies for power production.....	517
Assessment Requirements for UEPOPS054 Manage operational strategies for power production	520
UEPOPS055 Manage permit to work system.....	522
Assessment Requirements for UEPOPS055 Manage permit to work system	525
UEPOPS056 Manage quality control procedures	527
Assessment Requirements for UEPOPS056 Manage quality control procedures.....	530
UEPOPS057 Manage system restart	532
Assessment Requirements for UEPOPS057 Manage system restart.....	535
UEPOPS058 Manage work health and safety policy and procedures.....	537
Assessment Requirements for UEPOPS058 Manage work health and safety policy and procedures	541
UEPOPS059 Manage, operate and monitor a gas turbine unit	543
Assessment Requirements for UEPOPS059 Manage, operate and monitor a gas turbine unit	546
UEPOPS060 Monitor and coordinate the operation of a combined cycle gas turbine unit	548
Assessment Requirements for UEPOPS060 Monitor and coordinate the operation of a combined cycle gas turbine unit	553
UEPOPS061 Monitor and implement environmental site plans and procedures.....	556
Assessment Requirements for UEPOPS061 Monitor and implement environmental site plans and procedures.....	559
UEPOPS062 Monitor and maintain civil assets	561
Assessment Requirements for UEPOPS062 Monitor and maintain civil assets.....	564
UEPOPS063 Monitor and maintain wind farm civil assets	566
Assessment Requirements for UEPOPS063 Monitor and maintain wind farm civil assets	569
UEPOPS064 Monitor climatic conditions for renewable energy production.....	571
Assessment Requirements for UEPOPS064 Monitor climatic conditions for renewable energy production.....	575
UEPOPS065 Monitor implementation of quality control for production and maintenance	577
Assessment Requirements for UEPOPS065 Monitor implementation of quality control for production and maintenance	580
UEPOPS066 Monitor power generation plant reliability	582

Assessment Requirements for UEPOPS066 Monitor power generation plant reliability	585
UEPOPS067 Monitor the implementation of under frequency load shedding	587
Assessment Requirements for UEPOPS067 Monitor the implementation of under frequency load shedding	590
UEPOPS068 Operate a hydro generator synchronous condenser pump unit	592
Assessment Requirements for UEPOPS068 Operate a hydro generator synchronous condenser pump unit	595
UEPOPS069 Operate air conditioning plant	597
Assessment Requirements for UEPOPS069 Operate air conditioning plant	601
UEPOPS070 Operate and monitor a boiler unit	603
Assessment Requirements for UEPOPS070 Operate and monitor a boiler unit	606
UEPOPS071 Operate and monitor a heat recovery steam generator unit	608
Assessment Requirements for UEPOPS071 Operate and monitor a heat recovery steam generator unit	612
UEPOPS072 Operate and monitor a hydro turbine	614
Assessment Requirements for UEPOPS072 Operate and monitor a hydro turbine	618
UEPOPS073 Operate and monitor a steam turbine	620
Assessment Requirements for UEPOPS073 Operate and monitor a steam turbine	623
UEPOPS075 Operate and monitor a.c. electrical systems	625
Assessment Requirements for UEPOPS075 Operate and monitor a.c. electrical systems	629
UEPOPS076 Operate and monitor air conditioning plant and ventilation systems	631
Assessment Requirements for UEPOPS076 Operate and monitor air conditioning plant and ventilation systems	635
UEPOPS077 Operate and monitor alkalinity reduction plant	637
Assessment Requirements for UEPOPS077 Operate and monitor alkalinity reduction plant	641
UEPOPS078 Operate and monitor an internal combustion dual fuel reciprocating engine	643
Assessment Requirements for UEPOPS078 Operate and monitor an internal combustion dual fuel reciprocating engine	647
UEPOPS079 Operate and monitor an internal combustion single fuel reciprocating engine	649
Assessment Requirements for UEPOPS079 Operate and monitor an internal combustion single fuel reciprocating engine	653
UEPOPS080 Operate and monitor ash and dust disposal plant	655
Assessment Requirements for UEPOPS080 Operate and monitor ash and dust disposal plant	659
UEPOPS081 Operate and monitor auxiliary steam systems	661
Assessment Requirements for UEPOPS081 Operate and monitor auxiliary steam systems	665
UEPOPS082 Operate and monitor boiler draught system	667
Assessment Requirements for UEPOPS082 Operate and monitor boiler draught system	671
UEPOPS083 Operate and monitor boiler steam/water cycle	673
Assessment Requirements for UEPOPS083 Operate and monitor boiler steam/water cycle	677
UEPOPS084 Operate and monitor brine concentrator plant	679
Assessment Requirements for UEPOPS084 Operate and monitor brine concentrator plant	683
UEPOPS085 Operate and monitor communications system	685
Assessment Requirements for UEPOPS085 Operate and monitor communications system	688
UEPOPS086 Operate and monitor compressed air systems	690
Assessment Requirements for UEPOPS086 Operate and monitor compressed air systems	694
UEPOPS087 Operate and monitor compressed gas systems	696
Assessment Requirements for UEPOPS087 Operate and monitor compressed gas systems	700
UEPOPS088 Operate and monitor condenser and auxiliary cooling systems	702
Assessment Requirements for UEPOPS088 Operate and monitor condenser and auxiliary cooling systems	706
UEPOPS089 Operate and monitor d.c. electrical systems	708

Assessment Requirements for UEPOPS089 Operate and monitor d.c. electrical systems	712
UEPOPS090 Operate and monitor dual fuel firing plant	714
Assessment Requirements for UEPOPS090 Operate and monitor dual fuel firing plant.	718
UEPOPS091 Operate and monitor dust collection plant	720
Assessment Requirements for UEPOPS091 Operate and monitor dust collection plant ..	723
UEPOPS092 Operate and monitor fixed fire protection systems.....	725
Assessment Requirements for UEPOPS092 Operate and monitor fixed fire protection systems	729
UEPOPS093 Operate and monitor flue gas (NOx) mitigation systems.....	731
Assessment Requirements for UEPOPS093 Operate and monitor flue gas (NOx) mitigation systems.....	735
UEPOPS094 Operate and monitor fuel firing plant - coal.....	737
Assessment Requirements for UEPOPS094 Operate and monitor fuel firing plant - coal	740
UEPOPS095 Operate and monitor fuel firing plant - gas/oil.....	742
Assessment Requirements for UEPOPS095 Operate and monitor fuel firing plant - gas/oil	745
UEPOPS096 Operate and monitor fuel supply	747
Assessment Requirements for UEPOPS096 Operate and monitor fuel supply.....	751
UEPOPS097 Operate and monitor fuel supply - coal.....	753
Assessment Requirements for UEPOPS097 Operate and monitor fuel supply - coal	756
UEPOPS098 Operate and monitor gas production plant.....	758
Assessment Requirements for UEPOPS098 Operate and monitor gas production plant.	762
UEPOPS099 Operate and monitor generator/alternator.....	764
Assessment Requirements for UEPOPS099 Operate and monitor generator/alternator.	768
UEPOPS100 Operate and monitor heat exchangers and cooling systems.....	770
Assessment Requirements for UEPOPS100 Operate and monitor heat exchangers and cooling systems	774
UEPOPS101 Operate and monitor HRSG hot gas control system.....	776
Assessment Requirements for UEPOPS101 Operate and monitor HRSG hot gas control system.....	780
UEPOPS102 Operate and monitor hydro plant auxiliary systems	782
Assessment Requirements for UEPOPS102 Operate and monitor hydro plant auxiliary systems	785
UEPOPS103 Operate and monitor hydro unit control and protection systems.....	787
Assessment Requirements for UEPOPS103 Operate and monitor hydro unit control and protection systems.....	791
UEPOPS104 Operate and monitor oil systems	793
Assessment Requirements for UEPOPS104 Operate and monitor oil systems	797
UEPOPS105 Operate and monitor reverse osmosis plant	799
Assessment Requirements for UEPOPS105 Operate and monitor reverse osmosis plant	803
UEPOPS106 Operate and monitor site services water systems.....	805
Assessment Requirements for UEPOPS106 Operate and monitor site services water systems	808
UEPOPS107 Operate and monitor supervisory control and data acquisition systems	810
Assessment Requirements for UEPOPS107 Operate and monitor supervisory control and data acquisition systems	813
UEPOPS108 Operate and monitor system equipment	815
Assessment Requirements for UEPOPS108 Operate and monitor system equipment.....	818
UEPOPS109 Operate and monitor water quality monitoring systems	820
Assessment Requirements for UEPOPS109 Operate and monitor water quality monitoring systems	824
UEPOPS110 Operate and monitor water systems condensate and feedwater	826
Assessment Requirements for UEPOPS110 Operate and monitor water systems condensate and feedwater	830

UEPOPS111 Operate and monitor water treatment plant	832
Assessment Requirements for UEPOPS111 Operate and monitor water treatment plant.....	835
UEPOPS112 Operate bulk coal handling plant	837
Assessment Requirements for UEPOPS112 Operate bulk coal handling plant.....	841
UEPOPS113 Operate fabric filter dust collection plant	843
Assessment Requirements for UEPOPS113 Operate fabric filter dust collection plant....	846
UEPOPS114 Operate H.V. condition changing apparatus	848
Assessment Requirements for UEPOPS114 Operate H.V. condition changing apparatus.....	851
UEPOPS115 Operate hydroelectric generating plant and auxiliary equipment	853
Assessment Requirements for UEPOPS115 Operate hydroelectric generating plant and auxiliary equipment.....	857
UEPOPS116 Operate local H.V. switchgear.....	859
Assessment Requirements for UEPOPS116 Operate local H.V. switchgear	862
UEPOPS117 Operate local L.V. switchgear	865
Assessment Requirements for UEPOPS117 Operate local L.V. switchgear.....	868
UEPOPS118 Operate manual systems.....	870
Assessment Requirements for UEPOPS118 Operate manual systems.....	873
UEPOPS119 Operate waste and contaminated water plant	875
Assessment Requirements for UEPOPS119 Operate waste and contaminated water plant.....	879
UEPOPS120 Undertake operational commissioning and decommissioning	881
Assessment Requirements for UEPOPS120 Undertake operational commissioning and decommissioning	885
UEPOPS121 Perform plant lubrication.....	887
Assessment Requirements for UEPOPS121 Perform plant lubrication	890
UEPOPS122 Perform process plant inspections	892
Assessment Requirements for UEPOPS122 Perform process plant inspections.....	895
UEPOPS123 Perform risk analysis of generation plant	897
Assessment Requirements for UEPOPS123 Perform risk analysis of generation plant....	900
UEPOPS124 Perform switching to a switching program.....	902
Assessment Requirements for UEPOPS124 Perform switching to a switching program	905
UEPOPS125 Perform tool store duties	907
Assessment Requirements for UEPOPS125 Perform tool store duties	910
UEPOPS126 Plan a scheduled outage	912
Assessment Requirements for UEPOPS126 Plan a scheduled outage.....	915
UEPOPS127 Plan and organise work	917
Assessment Requirements for UEPOPS127 Plan and organise work	920
UEPOPS128 Produce maintenance plans for generation production plant	922
Assessment Requirements for UEPOPS128 Produce maintenance plans for generation production plant.....	926
UEPOPS129 Produce maintenance strategies for generation production plant.....	928
Assessment Requirements for UEPOPS129 Produce maintenance strategies for generation production plant.....	932
UEPOPS130 Respond to a critical incident	934
Assessment Requirements for UEPOPS130 Respond to a critical incident.....	937
UEPOPS131 Run up a steam turbine.....	939
Assessment Requirements for UEPOPS131 Run up a steam turbine	942
UEPOPS132 Schedule generation	944
Assessment Requirements for UEPOPS132 Schedule generation	948
UEPOPS133 Shut down a boiler unit.....	950
Assessment Requirements for UEPOPS133 Shut down a boiler unit	953
UEPOPS134 Shut down a gas turbine	955
Assessment Requirements for UEPOPS134 Shut down a gas turbine	959
UEPOPS135 Shut down a heat recovery steam generator unit	961

Assessment Requirements for UEPOPS135 Shut down a heat recovery steam generator unit	965
UEPOPS136 Shut down a hydro turbine.....	967
Assessment Requirements for UEPOPS136 Shut down a hydro turbine	970
UEPOPS137 Shut down a steam turbine.....	972
Assessment Requirements for UEPOPS137 Shut down a steam turbine.....	975
UEPOPS138 Start and run up gas turbine.....	977
Assessment Requirements for UEPOPS138 Start and run up gas turbine.....	981
UEPOPS139 Start and run up a hydro turbine	983
Assessment Requirements for UEPOPS139 Start and run up a hydro turbine	986
UEPOPS140 Start up a boiler unit.....	988
Assessment Requirements for UEPOPS140 Start up a boiler unit.....	992
UEPOPS141 Start up a heat recovery steam generator unit	994
Assessment Requirements for UEPOPS141 Start up a heat recovery steam generator unit.....	998
UEPOPS142 Transport plant and equipment.....	1000
Assessment Requirements for UEPOPS142 Transport plant and equipment	1004
UEPOPS143 Tune process plant and equipment.....	1006
Assessment Requirements for UEPOPS143 Tune process plant and equipment	1009
UEPOPS144 Undertake dam safety surveillance.....	1011
Assessment Requirements for UEPOPS144 Undertake dam safety surveillance	1014
UEPOPS145 Undertake local systems operations.....	1016
Assessment Requirements for UEPOPS145 Undertake local systems operations	1019
UEPOPS146 Operate and monitor hydro plant/systems.....	1021
Assessment Requirements for UEPOPS146 Operate and monitor hydro plant/systems	1024
UEPOPS148 Operate and monitor local grid operations control room.....	1027
Assessment Requirements for UEPOPS148 Operate and monitor local grid operations control room.....	1030
UEPOPS150 Operate and monitor multiple facilities from single control room	1033
Assessment Requirements for UEPOPS150 Operate and monitor multiple facilities from single control room	1036
UEPOPS152 Operate Renewable Energy Generation and Storage systems	1039
Assessment Requirements for UEPOPS152 Operate Renewable Energy Generation and Storage systems	1042
BSBHRM413 Support the learning and development of teams and individuals	1045
Assessment Requirements for BSBHRM413 Support the learning and development of teams and individuals	1048
BSBHRM523 Coordinate the learning and development of teams and individuals	1050
Assessment Requirements for BSBHRM523 Coordinate the learning and development of teams and individuals	1053
BSBINS402 Coordinate workplace information systems.....	1055
Assessment Requirements for BSBINS402 Coordinate workplace information systems.....	1058
BSBINS501 Implement information and knowledge management systems.....	1060
Assessment Requirements for BSBINS501 Implement information and knowledge management systems	1063
BSBLDR301 Support effective workplace relationships.....	1065
Assessment Requirements for BSBLDR301 Support effective workplace relationships	1068
BSBLDR413 Lead effective workplace relationships	1070
Assessment Requirements for BSBLDR413 Lead effective workplace relationships	1073
BSBLDR414 Lead team effectiveness	1075
Assessment Requirements for BSBLDR414 Lead team effectiveness	1078
BSBLDR522 Manage people performance.....	1080
Assessment Requirements for BSBLDR522 Manage people performance	1083
BSBOPS203 Deliver a service to customers.....	1085

Assessment Requirements for BSBOPS203 Deliver a service to customers	1088
BSBOPS301 Maintain business resources	1090
Assessment Requirements for BSBOPS301 Maintain business resources	1093
BSBOPS402 Coordinate business operational plans	1095
Assessment Requirements for BSBOPS402 Coordinate business operational plans	1098
BSBOPS404 Implement customer service strategies	1100
Assessment Requirements for BSBOPS404 Implement customer service strategies	1103
BSBOPS502 Manage business operational plans	1105
Assessment Requirements for BSBOPS502 Manage business operational plans	1108
BSBOPS505 Manage organisational customer service	1110
Assessment Requirements for BSBOPS505 Manage organisational customer service	1113
BSBPEF301 Organise personal work priorities	1115
Assessment Requirements for BSBPEF301 Organise personal work priorities	1118
BSBPEF402 Develop personal work priorities	1120
Assessment Requirements for BSBPEF402 Develop personal work priorities	1123
BSBPEF501 Manage personal and professional development	1125
Assessment Requirements for BSBPEF501 Manage personal and professional development	1128
BSBST301 Contribute to continuous improvement	1130
Assessment Requirements for BSBSTR301 Contribute to continuous improvement	1133
BSBST401 Promote innovation in team environments	1135
Assessment Requirements for BSBSTR401 Promote innovation in team environments	1138
BSBST402 Implement continuous improvement	1140
Assessment Requirements for BSBSTR402 Implement continuous improvement	1143
BSBST501 Establish innovative work environments	1145
Assessment Requirements for BSBSTR501 Establish innovative work environments	1148
BSBST502 Facilitate continuous improvement	1150
Assessment Requirements for BSBSTR502 Facilitate continuous improvement	1153
BSBTWK201 Work effectively with others	1155
Assessment Requirements for BSBTWK201 Work effectively with others	1158
BSBTWK502 Manage team effectiveness	1160
Assessment Requirements for BSBTWK502 Manage team effectiveness	1163
BSBWHS521 Ensure a safe workplace for a work area	1165
Assessment Requirements for BSBWHS521 Ensure a safe workplace for a work area	1169
CPCCCM2007 Use explosive power tools	1171
Assessment Requirements for CPCCCM2007 Use explosive power tools	1175
CPCCLDG3001 Licence to perform dogging	1178
Assessment Requirements for CPCCLDG3001 Licence to perform dogging	1182
CPCCLHS3001 Licence to operate a personnel and materials hoist	1187
Assessment Requirements for CPCCLHS3001 Licence to operate a personnel and materials hoist	1190
CPCCLHS3002 Licence to operate a materials hoist	1194
Assessment Requirements for CPCCLHS3002 Licence to operate a materials hoist	1197
CPCCLRG3001 Licence to perform rigging basic level	1201
Assessment Requirements for CPCCLRG3001 Licence to perform rigging basic level	1205
CPCCLRG3002 Licence to perform rigging intermediate level	1211
Assessment Requirements for CPCCLRG3002 Licence to perform rigging intermediate level	1215
CPCCLRG4001 Licence to perform rigging advanced level	1221
Assessment Requirements for CPCCLRG4001 Licence to perform rigging advanced level	1225
CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level	1230
Assessment Requirements for CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level	1234

CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level	1240
Assessment Requirements for CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level	1244
CPCCLSF4001 Licence to erect, alter and dismantle scaffolding advanced level	1250
Assessment Requirements for CPCCLSF4001 Licence to erect, alter and dismantle scaffolding advanced level	1254
CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry	1259
Assessment Requirements for CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry	1262
FBPSUG2022 Operate a waste water treatment system	1264
Assessment Requirements for FBPSUG2022 Operate a waste water treatment system	1267
HLTAID009 Provide cardiopulmonary resuscitation	1269
Assessment Requirements for HLTAID009 Provide cardiopulmonary resuscitation	1271
HLTAID011 Provide First Aid	1274
Assessment Requirements for HLTAID011 Provide First Aid	1276
HLTWHS005 Conduct manual tasks safely	1280
Assessment Requirements for HLTWHS005 Conduct manual tasks safely	1283
ICTICT214 Operate application software packages	1286
Assessment Requirements for ICTICT214 Operate application software packages	1289
ICTICT215 Operate digital media technology packages	1291
Assessment Requirements for ICTICT215 Operate digital media technology packages	1294
MEM05004 Perform routine oxy fuel gas welding	1296
Assessment Requirements for MEM05004 Perform routine oxy fuel gas welding	1300
MEM05005 Carry out mechanical cutting	1302
Assessment Requirements for MEM05005 Carry out mechanical cutting	1306
MEM05007 Perform manual heating and thermal cutting	1308
Assessment Requirements for MEM05007 Perform manual heating and thermal cutting	1312
MEM05011 Assemble fabricated components	1314
Assessment Requirements for MEM05011 Assemble fabricated components	1319
MEM05012 Perform routine manual metal arc welding	1321
Assessment Requirements for MEM05012 Perform routine manual metal arc welding	1324
MEM05015 Weld using manual metal arc welding process	1326
Assessment Requirements for MEM05015 Weld using manual metal arc welding process	1331
MEM05016 Perform advanced welding using manual metal arc welding process	1333
Assessment Requirements for MEM05016 Perform advanced welding using manual metal arc welding process	1338
MEM05017 Weld using gas metal arc welding process	1340
Assessment Requirements for MEM05017 Weld using gas metal arc welding process	1345
MEM05018 Perform advanced welding using gas metal arc welding process	1347
Assessment Requirements for MEM05018 Perform advanced welding using gas metal arc welding process	1352
MEM05019 Weld using gas tungsten arc welding process	1354
Assessment Requirements for MEM05019 Weld using gas tungsten arc welding process	1359
MEM05020 Perform advanced welding using gas tungsten arc welding process	1361
Assessment Requirements for MEM05020 Perform advanced welding using gas tungsten arc welding process	1365
MEM05022 Perform advanced welding using oxy acetylene welding process	1367
Assessment Requirements for MEM05022 Perform advanced welding using oxy acetylene welding process	1372
MEM05024 Perform welding supervision	1374
Assessment Requirements for MEM05024 Perform welding supervision	1378
MEM05026 Apply welding principles	1380

Assessment Requirements for MEM05026 Apply welding principles	1384
MEM05036 Repair, replace and/or modify fabrications.....	1386
Assessment Requirements for MEM05036 Repair, replace and/or modify fabrications	1391
MEM05043 Perform welds to code standards using gas metal arc welding process	1393
Assessment Requirements for MEM05043 Perform welds to code standards using gas metal arc welding process	1397
MEM05044 Perform welds to code standards using gas tungsten arc welding process ..	1399
Assessment Requirements for MEM05044 Perform welds to code standards using gas tungsten arc welding process	1403
MEM05045 Perform pipe welds to code standards using manual metal arc welding process.....	1405
Assessment Requirements for MEM05045 Perform pipe welds to code standards using manual metal arc welding process	1409
MEM05046 Perform welds to code standards using manual metal arc welding process	1411
Assessment Requirements for MEM05046 Perform welds to code standards using manual metal arc welding process	1415
MEM05049 Perform routine gas tungsten arc welding.....	1417
Assessment Requirements for MEM05049 Perform routine gas tungsten arc welding ..	1421
MEM05050 Perform routine gas metal arc welding.....	1423
Assessment Requirements for MEM05050 Perform routine gas metal arc welding	1427
MEM05051 Select welding processes	1429
Assessment Requirements for MEM05051 Select welding processes.....	1434
MEM05052 Apply safe welding practices.....	1436
Assessment Requirements for MEM05052 Apply safe welding practices	1443
MEM07005 Perform general machining	1445
Assessment Requirements for MEM07005 Perform general machining	1450
MEM07006 Perform lathe operations.....	1452
Assessment Requirements for MEM07006 Perform lathe operations	1456
MEM07007 Perform milling operations	1458
Assessment Requirements for MEM07007 Perform milling operations.....	1462
MEM07008 Perform grinding operations	1464
Assessment Requirements for MEM07008 Perform grinding operations	1468
MEM07011 Perform complex milling operations	1470
Assessment Requirements for MEM07011 Perform complex milling operations	1474
MEM07012 Perform complex grinding operations	1476
Assessment Requirements for MEM07012 Perform complex grinding operations	1479
MEM07021 Perform complex lathe operations.....	1481
Assessment Requirements for MEM07021 Perform complex lathe operations	1485
MEM09002 Interpret technical drawing	1487
Assessment Requirements for MEM09002 Interpret technical drawing.....	1490
MEM09003 Prepare basic engineering drawing.....	1492
Assessment Requirements for MEM09003 Prepare basic engineering drawing	1496
MEM09004 Perform electrical or electronic detail drafting.....	1498
Assessment Requirements for MEM09004 Perform electrical or electronic detail drafting	1501
MEM09005 Perform basic engineering detail drafting.....	1503
Assessment Requirements for MEM09005 Perform basic engineering detail drafting...	1506
MEM09006 Perform advanced engineering detail drafting	1508
Assessment Requirements for MEM09006 Perform advanced engineering detail drafting	1511
MEM11011 Undertake manual handling	1513
Assessment Requirements for MEM11011 Undertake manual handling.....	1516
MEM12003 Perform precision mechanical measurement	1518
Assessment Requirements for MEM12003 Perform precision mechanical measurement	1522
MEM12007 Mark off/out structural fabrications and shapes	1524

Assessment Requirements for MEM12007 Mark off/out structural fabrications and shapes	1528
MEM12023 Perform engineering measurements.....	1530
Assessment Requirements for MEM12023 Perform engineering measurements	1534
MEM12024 Perform computations	1536
Assessment Requirements for MEM12024 Perform computations.....	1540
MEM13015 Work safely and effectively in manufacturing and engineering.....	1542
Assessment Requirements for MEM13015 Work safely and effectively in manufacturing and engineering	1547
MEM14006 Plan work activities.....	1550
Assessment Requirements for MEM14006 Plan work activities	1554
MEM16006 Organise and communicate information	1556
Assessment Requirements for MEM16006 Organise and communicate information	1560
MEM18001 Use hand tools.....	1562
Assessment Requirements for MEM18001 Use hand tools	1566
MEM18002 Use power tools/hand held operations.....	1568
Assessment Requirements for MEM18002 Use power tools/hand held operations	1572
MEM18003 Use tools for precision work.....	1574
Assessment Requirements for MEM18003 Use tools for precision work	1579
MEM18006 Perform precision fitting of engineering components.....	1581
Assessment Requirements for MEM18006 Perform precision fitting of engineering components.....	1586
MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies	1588
Assessment Requirements for MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies	1594
MEM18009 Perform precision levelling and alignment of machines and engineering components.....	1596
Assessment Requirements for MEM18009 Perform precision levelling and alignment of machines and engineering components.....	1600
MEM18010 Perform equipment condition monitoring and recording	1602
Assessment Requirements for MEM18010 Perform equipment condition monitoring and recording.....	1605
MEM18018 Maintain pneumatic system components.....	1607
Assessment Requirements for MEM18018 Maintain pneumatic system components	1611
MEM18019 Maintain pneumatic systems.....	1613
Assessment Requirements for MEM18019 Maintain pneumatic systems	1618
MEM18020 Maintain hydraulic system components	1621
Assessment Requirements for MEM18020 Maintain hydraulic system components	1625
MEM18021 Maintain hydraulic systems	1627
Assessment Requirements for MEM18021 Maintain hydraulic systems.....	1632
MEM18022 Maintain fluid power controls	1635
Assessment Requirements for MEM18022 Maintain fluid power controls	1640
MEM18055 Dismantle, replace and assemble engineering components.....	1643
Assessment Requirements for MEM18055 Dismantle, replace and assemble engineering components.....	1647
MSMPER200 Work in accordance with an issued permit.....	1649
Assessment Requirements for MSMPER200 Work in accordance with an issued permit	1655
MSMPER205 Enter confined space	1658
Assessment Requirements for MSMPER205 Enter confined space.....	1666
NWPCAD002 Control vegetation on a site	1669
Assessment Requirements for NWPCAD002 Control vegetation on a site	1672
NWPCAD004 Maintain catchment and surrounding areas	1674
Assessment Requirements for NWPCAD004 Maintain catchment and surrounding areas	1677

NWPCAD008 Monitor and control dam operations	1679
Assessment Requirements for NWPCAD008 Monitor and control dam operations	1682
NWPCAD009 Monitor and implement dam maintenance.....	1684
Assessment Requirements for NWPCAD009 Monitor and implement dam maintenance.....	1687
NWPCAD012 Route floods through storages.....	1690
Assessment Requirements for NWPCAD012 Route floods through storages	1693
NWPCAD019 Monitor and operate groundwater extraction.....	1696
Assessment Requirements for NWPCAD019 Monitor and operate groundwater extraction.....	1699
NWPGEN020 Sample and test source or drinking water	1701
Assessment Requirements for NWPGEN020 Sample and test source or drinking water.....	1704
NWPGEN021 Sample and test wastewater	1706
Assessment Requirements for NWPGEN021 Sample and test wastewater	1709
NWPGEN023 Use maps, plans, drawings and details	1712
Assessment Requirements for NWPGEN023 Use maps, plans, drawings and details.....	1715
NWPGEN027 Monitor and operate pump stations	1717
Assessment Requirements for NWPGEN027 Monitor and operate pump stations.....	1720
NWPNET019 Prepare and restore worksite	1722
Assessment Requirements for NWPNET019 Prepare and restore worksite	1725
NWPNET040 Maintain and repair network assets for wastewater	1727
Assessment Requirements for NWPNET040 Maintain and repair network assets for wastewater	1730
NWPNET051 Monitor and operate water distribution systems.....	1733
Assessment Requirements for NWPNET051 Monitor and operate water distribution systems	1736
NWPTRT005 Monitor and operate water treatment processes	1738
Assessment Requirements for NWPTRT005 Monitor and operate water treatment processes	1741
NWPTRT006 Monitor and operate fluoride addition processes	1743
Assessment Requirements for NWPTRT006 Monitor and operate fluoride addition processes	1746
NWPTRT022 Monitor and operate hypochlorite disinfection processes.....	1748
Assessment Requirements for NWPTRT022 Monitor and operate hypochlorite disinfection processes.....	1751
NWPTRT027 Monitor and operate wastewater treatment processes.....	1753
Assessment Requirements for NWPTRT027 Monitor and operate wastewater treatment processes	1756
NWPTRT047 Monitor, operate and control lagoon processes	1758
Assessment Requirements for NWPTRT047 Monitor, operate and control lagoon processes	1761
PUAFER008 Confine small emergencies in a facility	1763
Assessment Requirements for PUAFER008 Confine small emergencies in a facility.....	1766
PUASAR022 Participate in a rescue operation	1768
Assessment Requirements for PUASAR022 Participate in a rescue operation.....	1772
PUASAR032 Undertake vertical rescue.....	1775
Assessment Requirements for PUASAR032 Undertake vertical rescue	1778
RIIHAN309F Conduct telescopic materials handler operations	1781
Assessment Requirements for RIIHAN309F Conduct telescopic materials handler operations	1785
RIIMPO304E Conduct wheel loader operations.....	1789
Assessment Requirements for RIIMPO304E Conduct wheel loader operations	1792
RIIMPO308F Conduct tracked dozer operations.....	1796
Assessment Requirements for RIIMPO308F Conduct tracked dozer operations	1799
RIIMPO309F Conduct wheeled dozer operations	1803

Assessment Requirements for RIIMPO309F Conduct wheeled dozer operations.....	1806
RIIMPO318F Conduct civil construction skid steer loader operations.....	1810
Assessment Requirements for RIIMPO318F Conduct civil construction skid steer loader operations	1814
RIIMPO319E Conduct backhoe/loader operations.....	1819
Assessment Requirements for RIIMPO319E Conduct backhoe/loader operations.....	1823
RIIWS202E Enter and work in confined spaces.....	1828
Assessment Requirements for RIIWS202E Enter and work in confined spaces	1831
RIIWS204E Work safely at heights	1835
Assessment Requirements for RIIWS204E Work safely at heights	1838
TAEDEL311 Provide work skill instruction	1842
Assessment Requirements for TAEDEL311 Provide work skill instruction	1845
TLILIC0003 Licence to operate a forklift truck	1847
Assessment Requirements for TLILIC0003 Licence to operate a forklift truck.....	1852
TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more).....	1858
Assessment Requirements for TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)	1864
TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above).....	1871
Assessment Requirements for TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above).....	1877
TLILIC0040 Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity).....	1885
Assessment Requirements for TLILIC0040 Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)	1891
UEECD0007 Apply work health and safety regulations, codes and practices in the workplace.....	1901
Assessment Requirements for UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	1904
UEECD0008 Carry out preparatory energy sector work activities	1908
Assessment Requirements for UEECD0008 Carry out preparatory energy sector work activities	1911
UEECD0010 Compile and produce an energy sector detailed report.....	1913
Assessment Requirements for UEECD0010 Compile and produce an energy sector detailed report	1916
UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work.....	1919
Assessment Requirements for UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work	1922
UEECD0019 Fabricate, assemble and dismantle utilities industry components.....	1926
Assessment Requirements for UEECD0019 Fabricate, assemble and dismantle utilities industry components	1930
UEECD0020 Fix and secure electrotechnology equipment.....	1934
Assessment Requirements for UEECD0020 Fix and secure electrotechnology equipment.....	1937
UEECD0024 Implement and monitor energy sector WHS policies and procedures.....	1940
Assessment Requirements for UEECD0024 Implement and monitor energy sector WHS policies and procedures	1944
UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits.....	1946
Assessment Requirements for UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits	1950
UEECD0035 Provide basic instruction in the use of electrotechnology apparatus	1953

Assessment Requirements for UEECD0035 Provide basic instruction in the use of electrotechnology apparatus	1956
UEECD0043 Solve problems in direct current circuits	1958
Assessment Requirements for UEECD0043 Solve problems in direct current circuits ..	1961
UEECD0044 Solve problems in multiple path circuits	1967
Assessment Requirements for UEECD0044 Solve problems in multiple path circuits ...	1970
UEECD0046 Solve problems in single path circuits	1975
Assessment Requirements for UEECD0046 Solve problems in single path circuits	1978
UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ..	1982
Assessment Requirements for UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	1985
UEECO0001 Estimate electrotechnology projects	1989
Assessment Requirements for UEECO0001 Estimate electrotechnology projects	1992
UEECO0002 Maintain documentation	1994
Assessment Requirements for UEECO0002 Maintain documentation	1997
UEECO0016 Receive and store materials and equipment for electrotechnology work ..	1999
Assessment Requirements for UEECO0016 Receive and store materials and equipment for electrotechnology work	2002
UEECO0017 Source and purchase material/parts for installation or service jobs	2004
Assessment Requirements for UEECO0017 Source and purchase material/parts for installation or service jobs	2007
UEECS0033 Use engineering applications software on personal computers	2009
Assessment Requirements for UEECS0033 Use engineering applications software on personal computers	2012
UEEDV0005 Install and maintain cabling for multiple access to telecommunication services	2014
Assessment Requirements for UEEDV0005 Install and maintain cabling for multiple access to telecommunication services	2020
UEEDV0006 Install and modify optical fibre performance data communication cabling ..	2025
Assessment Requirements for UEEDV0006 Install and modify optical fibre performance data communication cabling	2029
UEEEL0003 Arrange circuits, control and protection for electrical installations	2031
Assessment Requirements for UEEEL0003 Arrange circuits, control and protection for electrical installations	2035
UEEEL0005 Develop and connect electrical control circuits	2040
Assessment Requirements for UEEEL0005 Develop and connect electrical control circuits ..	2045
UEEEL0011 Evaluate performance of low voltage electrical apparatus	2049
Assessment Requirements for UEEEL0011 Evaluate performance of low voltage electrical apparatus	2053
UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits	2055
Assessment Requirements for UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits	2061
UEEEL0020 Solve problems in low voltage a.c. circuits	2067
Assessment Requirements for UEEEL0020 Solve problems in low voltage a.c. circuits ..	2071
UEEEL0021 Solve problems in magnetic and electromagnetic devices	2077
Assessment Requirements for UEEEL0021 Solve problems in magnetic and electromagnetic devices	2081
UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	2084
Assessment Requirements for UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	2088
UEEEL0024 Test and connect alternating current (a.c.) rotating machines	2092
Assessment Requirements for UEEEL0024 Test and connect alternating current (a.c.) rotating machines	2096

UEEEL0025 Test and connect transformers	2101
Assessment Requirements for UEEEL0025 Test and connect transformers	2105
UEEEL0047 Identify, shut down and restart systems with alternate supplies	2108
Assessment Requirements for UEEEL0047 Identify, shut down and restart systems with alternate supplies	2112
UEEIC0022 Install instrumentation and control apparatus and associated equipment	2116
Assessment Requirements for UEEIC0022 Install instrumentation and control apparatus and associated equipment	2120
UEEIC0023 Install instrumentation and control cabling and tubing	2122
Assessment Requirements for UEEIC0023 Install instrumentation and control cabling and tubing	2126
UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals	2128
Assessment Requirements for UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals	2131
UEPMNT302 Install and maintain industrial pipe work	2135
Assessment Requirements for UEPMNT302 Install and maintain industrial pipe work	2139
UEPMNT303 Maintain mechanical valves	2142
Assessment Requirements for UEPMNT303 Maintain mechanical valves	2146
UEPMNT304 Maintain mechanical pumps	2149
Assessment Requirements for UEPMNT304 Maintain mechanical pumps	2153
UEPMNT305 Maintain industrial fans	2156
Assessment Requirements for UEPMNT305 Maintain industrial fans	2160
UEPMNT307 Maintain industrial screens, strainers and filters	2163
Assessment Requirements for UEPMNT307 Maintain industrial screens, strainers and filters	2168
UEPMNT308 Maintain conveyors and associated equipment	2171
Assessment Requirements for UEPMNT308 Maintain conveyors and associated equipment	2175
UEPMNT309 Maintain material feeders	2178
Assessment Requirements for UEPMNT309 Maintain material feeders	2183
UEPMNT310 Maintain material crushers	2186
Assessment Requirements for UEPMNT310 Maintain material crushers	2191
UEPMNT312 Maintain industrial pressure vessels	2194
Assessment Requirements for UEPMNT312 Maintain industrial pressure vessels	2198
UEPMNT314 Maintain hydro turbines	2201
Assessment Requirements for UEPMNT314 Maintain hydro turbines	2205
UEPMNT317 Diagnose and repair faults in mechanical equipment	2208
Assessment Requirements for UEPMNT317 Diagnose and repair faults in mechanical equipment	2212
UEPMNT318 Conduct generator mechanical maintenance	2214
Assessment Requirements for UEPMNT318 Conduct generator mechanical maintenance	2218
UEPMNT340 Fabricate metal structures and components	2221
Assessment Requirements for UEPMNT340 Fabricate metal structures and components	2225
UEPMNT346 Maintain electrical equipment	2228
Assessment Requirements for UEPMNT346 Maintain electrical equipment	2232
UEPMNT347 Maintain complex electrical equipment	2234
Assessment Requirements for UEPMNT347 Maintain complex electrical equipment	2237
UEPMNT348 Maintain electrical electronic equipment	2239
Assessment Requirements for UEPMNT348 Maintain electrical electronic equipment	2243
UEPMNT350 Modify electrical equipment	2246
Assessment Requirements for UEPMNT350 Modify electrical equipment	2250
UEPMNT351 Test and commission electrical equipment	2252

Assessment Requirements for UEPMNT351 Test and commission electrical equipment	2256
UEPMNT355 Install complex electronic instrumentation equipment	2258
Assessment Requirements for UEPMNT355 Install complex electronic instrumentation equipment	2262
UEPMNT356 Maintain instrumentation equipment	2264
Assessment Requirements for UEPMNT356 Maintain instrumentation equipment	2267
UEPMNT357 Diagnose and repair faults in instrumentation equipment	2269
Assessment Requirements for UEPMNT357 Diagnose and repair faults in instrumentation equipment	2273
UEPMNT358 Modify instrumentation equipment	2276
Assessment Requirements for UEPMNT358 Modify instrumentation equipment	2279
UEPMNT359 Test and commission instrumentation equipment	2281
Assessment Requirements for UEPMNT359 Test and commission instrumentation equipment	2286
UEPMNT366 Maintain power plant inverter systems	2289
Assessment Requirements for UEPMNT366 Maintain power plant inverter systems	2293
UEPMNT367 Install and commission stationary gas fuelled reciprocating engines	2295
Assessment Requirements for UEPMNT367 Install and commission stationary gas fuelled reciprocating engines	2300
UEPMNT368 Repair and maintain stationary gas fuelled reciprocating engines	2303
Assessment Requirements for UEPMNT368 Repair and maintain stationary gas fuelled reciprocating engines	2307
UEPMNT401 Install and maintain complex mechanical seals	2309
Assessment Requirements for UEPMNT401 Install and maintain complex mechanical seals	2314
UEPMNT402 Conduct complex levelling and alignment	2317
Assessment Requirements for UEPMNT402 Conduct complex levelling and alignment	2321
UEPMNT403 Maintain complex mechanical valves	2324
Assessment Requirements for UEPMNT403 Maintain complex mechanical valves	2329
UEPMNT404 Maintain complex mechanical pumps	2332
Assessment Requirements for UEPMNT404 Maintain complex mechanical pumps	2336
UEPMNT408 Install hydro turbines	2339
Assessment Requirements for UEPMNT408 Install hydro turbines	2343
UEPMNT410 Diagnose and repair faults in electronic equipment	2346
Assessment Requirements for UEPMNT410 Diagnose and repair faults in electronic equipment	2351
UEPMNT411 Diagnose and repair faults in complex electrical equipment	2354
Assessment Requirements for UEPMNT411 Diagnose and repair faults in complex electrical equipment	2359
UEPMNT412 Modify complex electrical equipment	2361
Assessment Requirements for UEPMNT412 Modify complex electrical equipment	2365
UEPMNT414 Test and commission complex electrical equipment	2367
Assessment Requirements for UEPMNT414 Test and commission complex electrical equipment	2372
UEPMNT417 Inspect electrical generators and diagnose faults	2375
Assessment Requirements for UEPMNT417 Inspect electrical generators and diagnose faults	2379
UEPMNT419 Perform civil drafting	2381
Assessment Requirements for UEPMNT419 Perform civil drafting	2384
UEPMNT421 Conduct technical inspection of process plant and equipment	2386
Assessment Requirements for UEPMNT421 Conduct technical inspection of process plant and equipment	2390
UEPMNT422 Conduct performance testing on process plant and equipment	2393

Assessment Requirements for UEPMNT422 Conduct performance testing on process plant and equipment.....	2397
UEPMNT425 Maintain complex instrumentation equipment.....	2399
Assessment Requirements for UEPMNT425 Maintain complex instrumentation equipment.....	2403
UEPMNT427 Diagnose and repair faults in complex instrumentation equipment	2406
Assessment Requirements for UEPMNT427 Diagnose and repair faults in complex instrumentation equipment.....	2411
UEPMNT428 Modify complex instrumentation equipment	2414
Assessment Requirements for UEPMNT428 Modify complex instrumentation equipment.....	2418
UEPMNT430 Test and commission complex instrumentation equipment.....	2420
Assessment Requirements for UEPMNT430 Test and commission complex instrumentation equipment.....	2424
UEPMNT433 Conduct routine generator electrical maintenance.....	2427
Assessment Requirements for UEPMNT433 Conduct routine generator electrical maintenance.....	2431
UEPMNT440 Diagnose and repair faults in power plant inverter systems.....	2433
Assessment Requirements for UEPMNT440 Diagnose and repair faults in power plant inverter systems	2438
UEERE0001 Apply environmentally and sustainable procedures in the energy sector ..	2441
Assessment Requirements for UEERE0001 Apply environmentally and sustainable procedures in the energy sector	2444
UEERE0002 Assemble and connect remote area power supplies	2446
Assessment Requirements for UEERE0002 Assemble and connect remote area power supplies.....	2450
UEERE0006 Conduct periodic maintenance of remote area power supply battery banks.....	2453
Assessment Requirements for UEERE0006 Conduct periodic maintenance of remote area power supply battery banks.....	2457
UEERE0007 Conduct periodic maintenance of remote area power supply generator sets.....	2459
Assessment Requirements for UEERE0007 Conduct periodic maintenance of remote area power supply generator sets.....	2463
UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays	2466
Assessment Requirements for UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays	2470
UEERE0009 Conduct periodic maintenance of remote area power supply wind generators.....	2472
Assessment Requirements for UEERE0009 Conduct periodic maintenance of remote area power supply wind generators.....	2476
UEERE0017 Maintain and repair facilities associated with remote area essential service operations	2478
Assessment Requirements for UEERE0017 Maintain and repair facilities associated with remote area essential service operations.....	2482
UEERE0018 Maintain and repair remote area power generation facilities.....	2485
Assessment Requirements for UEERE0018 Maintain and repair remote area power generation facilities.....	2489
UEERE0019 Maintain safety and tidiness of remote area power supply systems	2492
Assessment Requirements for UEERE0019 Maintain safety and tidiness of remote area power supply systems	2495
UEERE0020 Promote sustainable energy practices in the community.....	2497
Assessment Requirements for UEERE0020 Promote sustainable energy practices in the community	2500
UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises	2503

Assessment Requirements for UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises	2506
UEERE0023 Work safely with remote area power supply systems	2509
Assessment Requirements for UEERE0023 Work safely with remote area power supply systems	2512
UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus	2515
Assessment Requirements for UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus.....	2518
UEERE0040 Maintain and monitor remote area essential service operations.....	2524
Assessment Requirements for UEERE0040 Maintain and monitor remote area essential service operations.....	2528
UEERE0041 Maintain operation of remote area power generation plant	2531
Assessment Requirements for UEERE0041 Maintain operation of remote area power generation plant	2534
UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply	2538
Assessment Requirements for UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply	2542
UEERL0003 Conduct in-service safety testing of electrical cord connected equipment and cord assemblies.....	2546
Assessment Requirements for UEERL0003 Conduct in-service safety testing of electrical cord connected equipment and cord assemblies	2550
UEGNSG709 Process meter reading information using appropriate technology	2553
Assessment Requirements for UEGNSG709 Process meter reading information using appropriate technology.....	2557
UEGNSG710 Read and record meter readings.....	2560
Assessment Requirements for UEGNSG710 Read and record meter readings	2564
UETDRDO001 Inspect overhead poles, structures and electrical apparatus	2567
Assessment Requirements for UETDRDO001 Inspect overhead poles, structures and electrical apparatus.....	2570
UETDREL001 Apply environmental requirements	2573
Assessment Requirements for UETDREL001 Apply environmental requirements.....	2576
UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus.....	2579
Assessment Requirements for UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus	2582
UETDREL005 Work safely in the vicinity of live electrical apparatus	2585
Assessment Requirements for UETDREL005 Work safely in the vicinity of live electrical apparatus	2588
UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker	2591
Assessment Requirements for UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker	2594
UETDRMP001 Apply access authority procedures to work on or near electrical apparatus.....	2597
Assessment Requirements for UETDRMP001 Apply access authority procedures to work on or near electrical apparatus.....	2600
UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus.....	2602
Assessment Requirements for UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus.....	2604
UETDRMP009 Perform tower rescue	2606
Assessment Requirements for UETDRMP009 Perform tower rescue	2609
UETDRRC004 Install and replace energy meters and associated equipment in a very remote community	2611

Assessment Requirements for UETDRRC004 Install and replace energy meters and associated equipment in a very remote community	2615
UETDRRC006 Perform low voltage electricity network switching in a very remote community	2619
Assessment Requirements for UETDRRC006 Perform low voltage electricity network switching in a very remote community	2623
UETDRRC007 Solve problems in electrical network apparatus in a very remote community	2626
Assessment Requirements for UETDRRC007 Solve problems in electrical network apparatus in a very remote community	2630
UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community	2636
Assessment Requirements for UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community	2640
UEP Electricity Supply Industry - Generation Sector Training Package	2645
UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine ...	2646
UEPSS00010 High Risk Licensing - Licence to operate a steam turbine.....	2648
UEPSS00011 High Voltage Operation - Development and coordination of H.V. switching programs.....	2650
UEPSS00012 High Voltage Operation - H.V. switching programs	2652

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Links

Companion Volume implementation guides are found in VETNet -
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UEP20122 Certificate II in ESI Generation - Operations Support

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package. With the following change:

- Minor change to Packaging Rules.

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to perform operations support functions in the electrical supply industry. Functions include the operation of non-critical generation plant systems, lubricating generation plant and performing minor maintenance on electrical and mechanical equipment. It also includes cleaning power generation plant, operating mobile load shifting equipment and observing safe working practices in the workplace.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **13 units** comprising:

- **6 core units** listed below; **plus**
- **7 elective units** from Group A.

1 elective unit may be selected with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite unit is attached to a unit, it is identified by this symbol $\perp$.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace

UEPOPS002	Apply environmental and sustainable energy procedures
UEPOPS003	Apply quality systems to work
UEPOPS045	Maintain and utilise records
UEPOPS122	Perform process plant inspections
UEPOPS145	Undertake local systems operations

Group A Elective units

CPCCCM2007	Use explosive power tools └ CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry
CPCCLDG3001	Licence to perform dogging
CPCCLHS3001	Licence to operate a personnel and materials hoist
CPCCLHS3002	Licence to operate a materials hoist
CPCCLRG3001	Licence to perform rigging basic level └ CPCCLDG3001 Licence to perform dogging
CPCCLRG3002	Licence to perform rigging intermediate level └ CPCCLRG3001 Licence to perform rigging basic level
CPCCLSF2001	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001	Licence to erect, alter and dismantle scaffolding intermediate level └ CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level
CPCCWHS2001	Apply WHS requirements, policies and procedures in the construction industry
MEM05004	Perform routine oxy fuel gas welding └ MEM11011 Undertake manual handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM05007	Perform manual heating and thermal cutting └ MEM09002 Interpret technical drawing └ MEM11011 Undertake manual handling └ MEM12023 Perform engineering measurements

	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM05012	Perform routine manual metal arc welding └ MEM11011 Undertake manual handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM09002	Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM11011	Undertake manual handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM12023	Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM12024	Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information └ MEM13015 Work safely and effectively in manufacturing and engineering
RIIMPO304E	Conduct wheel loader operations
RIIMPO308F	Conduct tracked dozer operations
RIIMPO309F	Conduct wheeled dozer operations
RIIMPO319E	Conduct backhoe/loader operations
TLILIC0003	Licence to operate a forklift truck
TLILIC0024	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
TLILIC0040	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)
UEECD0019	Fabricate, assemble and dismantle utilities industry components └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEPMNT001	Carry out routine work activities in an electricity supply industry generation environment
UEPOPS005	Clean plant and equipment
UEPOPS007	Conduct chemical batching operations
UEPOPS009	Conduct minor electrical maintenance
UEPOPS010	Conduct minor mechanical maintenance
UEPOPS016	Conduct routine wind turbine maintenance
UEPOPS044	Liaise with stakeholders
UEPOPS046	Maintain battery banks and cells
UEPOPS069	Operate air conditioning plant
UEPOPS078	Operate and monitor an internal combustion dual fuel reciprocating engine
UEPOPS079	Operate and monitor an internal combustion single fuel reciprocating engine
UEPOPS080	Operate and monitor ash and dust disposal plant
UEPOPS085	Operate and monitor communications system
UEPOPS091	Operate and monitor dust collection plant
UEPOPS097	Operate and monitor fuel supply - coal
UEPOPS106	Operate and monitor site services water systems
UEPOPS119	Operate waste and contaminated water plant
UEPOPS121	Perform plant lubrication
UEPOPS125	Perform tool store duties
UEPOPS142	Transport plant and equipment

Qualification Mapping Information

This qualification replaces and is equivalent to UEP20118 Certificate II in ESI Generation - Operations Support

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP20222 Certificate II in Remote Area Essential Service

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package. With the following change:

- Minor change to Packaging Rules.

Release 1. This is the first release of this qualification in the UEP - Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to perform operations in remote area essential services in the electrical supply industry (ESI). Functions include selecting, assembling, setting up and maintaining simple equipment and systems following prescribed workplace procedures and routines, including observing safe working practices.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **14 units of Competency** comprising:

- **8 core units** listed below; **plus**
- **6 elective units** from Group A listed below.
1 elective unit may be selected with appropriate contextualisation from a qualification in this or any other endorsed Training Package, provided selected unit contributes to the vocational outcome of the qualification.

Where imported unit is selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite unit is attached to a unit, it is identified by this symbol $\perp$.

Core Units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace

UEECD0019	Fabricate, assemble and dismantle utilities industry components └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEERE0001	Apply environmentally and sustainable procedures in the energy sector
UEERE0019	Maintain safety and tidiness of remote area power supply systems └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEERE0023 Work safely with remote area power supply systems
UEERE0023	Work safely with remote area power supply systems └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEGNSG710	Read and record meter readings
UEPOPS044	Liaise with stakeholders
UETDREL006	Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Group A Elective Units

BSBOPS203	Deliver a service to customers
FBPSUG2022	Operate a waste water treatment system
MEM05007	Perform manual heating and thermal cutting └ MEM09002 Interpret technical drawing └ MEM11011 Undertake manual handling └ MEM12023 Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM05012	Perform routine manual metal arc welding └ MEM11011 Undertake manual handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM09002	Interpret technical drawing

	└ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM11011	Undertake manual handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM12023	Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM12024	Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information └ MEM13015 Work safely and effectively in manufacturing and engineering
NWPCAD002	Control vegetation on a site
NWPCAD004	Maintain catchment and surrounding areas
NWPCAD019	Monitor and operate groundwater extraction
NWPGEN020	Sample and test source or drinking water
NWPGEN021	Sample and test wastewater
NWPGEN023	Use maps, plans, drawings and details
NWPGEN027	Monitor and operate pump stations
NWPNET019	Prepare and restore worksite
NWPNET040	Maintain and repair network assets for wastewater

NWPNET051	Monitor and operate water distribution systems
NWPTRT005	Monitor and operate water treatment processes
NWPTRT006	Monitor and operate fluoride addition processes
NWPTRT022	Monitor and operate hypochlorite disinfection processes
NWPTRT027	Monitor and operate wastewater treatment processes
NWPTRT047	Monitor, operate and control lagoon processes
UEECD0008	Carry out preparatory energy sector work activities └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0016	Document and apply measures to control WHS risks associated with electrotechnology work └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0020	Fix and secure electrotechnology equipment └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0020	Fix and secure electrotechnology equipment └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0025	Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
UEECD0035	Provide basic instruction in the use of electrotechnology apparatus
UEECD0043	Solve problems in direct current circuits └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits └ UEECD0007 Apply work health and safety regulations, codes and

	practices in the workplace
	└ UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECO0002	Maintain documentation
UEECO0016	Receive and store materials and equipment for electrotechnology work
UEECO0017	Source and purchase material/parts for installation or service jobs
UEEEL0023	Terminate cables, cords and accessories for low voltage circuits
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	└ UEECD0020 Fix and secure electrotechnology equipment
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	and
	└ UEECD0043 Solve problems in direct current circuits
	or
	└ UEECD0044 Solve problems in multiple path circuits
	└ UEECD0046 Solve problems in single path circuits
UEERE0002	Assemble and connect remote area power supplies
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

- └ UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits
 - or
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits
 - └ UEECD0046 Solve problems in single path circuits
- UEERE0006 Conduct periodic maintenance of remote area power supply battery banks
 - └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
 - └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - └ UEERE0019 Maintain safety and tidiness of remote area power supply systems
 - └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
 - └ UEERE0023 Work safely with remote area power supply systems
 - or
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits
 - └ UEECD0046 Solve problems in single path circuits
- UEERE0007 Conduct periodic maintenance of remote area power supply generator sets
 - └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
 - └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - └ UEERE0019 Maintain safety and tidiness of remote area power supply systems
 - └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
 - └ UEERE0023 Work safely with remote area power supply systems
 - or
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits

- UEERE0008 ☐ UEECD0046 Solve problems in single path circuits
- Conduct periodic maintenance of remote area power supply photovoltaic arrays
- ☐ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
- ☐ UEECD0019 Fabricate, assemble and dismantle utilities industry components
- ☐ UEERE0019 Maintain safety and tidiness of remote area power supply systems
- ☐ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
- ☐ UEERE0023 Work safely with remote area power supply systems
- or
- ☐ UEECD0043 Solve problems in direct current circuits
- or
- ☐ UEECD0044 Solve problems in multiple path circuits
- ☐ UEECD0046 Solve problems in single path circuits
- UEERE0009 Conduct periodic maintenance of remote area power supply wind generators
- ☐ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
- ☐ UEECD0019 Fabricate, assemble and dismantle utilities industry components
- ☐ UEERE0019 Maintain safety and tidiness of remote area power supply systems
- ☐ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
- ☐ UEERE0023 Work safely with remote area power supply systems
- or
- ☐ UEECD0043 Solve problems in direct current circuits
- or
- ☐ UEECD0044 Solve problems in multiple path circuits
- ☐ UEECD0046 Solve problems in single path circuits
- UEERE0017 Maintain and repair facilities associated with remote area essential service operations
- ☐ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

- └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - and
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits
 - └ UEECD0046 Solve problems in single path circuits
- UEERE0018 Maintain and repair remote area power generation facilities
 - └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
 - └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
 - └ UEERE0019 Maintain safety and tidiness of remote area power supply systems
 - └ UEERE0023 Work safely with remote area power supply systems
 - └ UEERE0007 Conduct periodic maintenance of remote area power supply generator sets
 - and
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits
 - └ UEECD0046 Solve problems in single path circuits
- UEERE0020 Promote sustainable energy practices in the community
- UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises
- UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus
 - └ UEECD0043 Solve problems in direct current circuits
 - or
 - └ UEECD0044 Solve problems in multiple path circuits
 - └ UEECD0046 Solve problems in single path circuits
 - and
 - └ UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

	or
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits
UEERE0040	Maintain and monitor remote area essential service operations
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	└ UEERE0023 Work safely with remote area power supply systems
UEERE0041	Maintain operation of remote area power generation plant
	└ UEERE0018 Maintain and repair remote area power generation facilities
UEERL0001	Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEERL0003	Conduct in-service safety testing of electrical cord connected equipment and cord assemblies
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEGNSG709	Process meter reading information using appropriate technology
UEPOPS009	Conduct minor electrical maintenance
UEPOPS010	Conduct minor mechanical maintenance
UEPOPS018	Conduct water conveyance and control
UEPOPS078	Operate and monitor an internal combustion dual fuel reciprocating engine
UEPOPS079	Operate and monitor an internal combustion single fuel reciprocating engine
UEPOPS096	Operate and monitor fuel supply
UEPOPS099	Operate and monitor generator/alternator
UEPOPS109	Operate and monitor water quality monitoring systems
UEPOPS111	Operate and monitor water treatment plant
UEPOPS116	Operate local H.V. switchgear
UEPOPS117	Operate local L.V. switchgear
UEPOPS119	Operate waste and contaminated water plant

UEPOPS145	Undertake local systems operations
UETDRDO001	Inspect overhead poles, structures and electrical apparatus └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UETDREL001 Apply environmental requirements └ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDREL001	Apply environmental requirements
UETDREL004	Operate plant and equipment in the vicinity of live electrical apparatus └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDREL005	Work safely in the vicinity of live electrical apparatus └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRRC004	Install and replace energy meters and associated equipment in a very remote community └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0046 Solve problems in single path circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UETDREL001 Apply environmental requirements └ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus └ UETDREL005 Work safely in the vicinity of live electrical apparatus └ UETDRRC006 Perform low voltage electricity network switching in a very remote community └ UETDRRC007 Solve problems in electrical network apparatus in a very remote community └ UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community
UETDRRC006	Perform low voltage electricity network switching in a very remote community

	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UETDREL001 Apply environmental requirements └ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus └ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRRC007	Solve problems in electrical network apparatus in a very remote community └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0046 Solve problems in single path circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UETDREL001 Apply environmental requirements └ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus └ UETDREL005 Work safely in the vicinity of live electrical apparatus └ UETDRRC006 Perform low voltage electricity network switching in a very remote community
UETDRRC008	Solve problems in low voltage electrical network circuits in a very remote community

Qualification Mapping Information

This qualification replaces and is not equivalent to UEP20218 Certificate II in Remote Area Essential Service

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP30322 Certificate III in ESI Generation

Modification History

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to operate power generation plant systems, isolate power generation plant systems, and undertake routine maintenance on power generation plant and equipment in the electrical supply industry (ESI).

It also includes working with civil plant and infrastructure and observing safe working practices.

Combined Specialist - Operations and Systems Operations

This specialisation covers the skills and knowledge required to perform operations and systems operations.

Specialist - Operations

This specialisation covers the skills and knowledge required to perform operations.

Specialist - Systems Operations

This specialisation covers the skills and knowledge required to perform systems operations.

Please note: RTO to insert on the testamur, the specialisation selected from the specialist elective unit group below.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **31 units of competency** for the Combined Specialisation – Operations and Systems Operations

A total of **28 units of competency** for the Specialisation - Operations

A total of **28 units of competency** for the Specialisation - Systems Operations
comprising:

Combined Specialisation - Operations and Systems Operations

- 9 core units listed below; plus

- 3 specialisation units from Group A; plus
- 3 specialisation units from Group B; plus
- 12 elective units from Group C; plus
- 4 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Operations

- 9 core units listed below; plus
- 3 specialisation units from Group A; plus
- 12 elective units from Group C; plus
- 4 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Systems Operations

- 9 core units listed below; plus
- 3 specialisation units from Group B; plus
- 12 elective units from Group C; plus
- 4 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite unit is attached to a unit, it is identified by this symbol $\perp$.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEPOPS002	Apply environmental and sustainable energy procedures
UEPOPS003	Apply quality systems to work
UEPOPS017	Conduct single energy source isolation procedures for permit to work
UEPOPS037	Ensure compliance with work health and safety policy and procedures
UEPOPS044	Liaise with stakeholders
UEPOPS045	Maintain and utilise records
UEPOPS122	Perform process plant inspections
UEPOPS145	Undertake local systems operations

Group A: Specialist Electives - Operations

- UEPOPS004 Carry out operational checks on in-service electrical plant
- UEPOPS014 Conduct operational checks on in-service mechanical plant
- UEPOPS130 Respond to a critical incident

Group B: Specialist Electives - Systems Operations

- UEPOPS001 Analyse single protection device operation
- UEPOPS092 Operate and monitor fixed fire protection systems
- UEPOPS107 Operate and monitor supervisory control and data acquisition systems

Group C: General Electives

- BSBHRM413 Support the learning and development of teams and individuals
- BSBLDR301 Support effective workplace relationships
- BSBOPS301 Maintain business resources
- BSBOPS402 Coordinate business operational plans
- BSBPEF301 Organise personal work priorities
- BSBSTR301 Contribute to continuous improvement
- BSBSTR401 Promote innovation in team environments
- BSBTWK201 Work effectively with others
- CPCCCM2007 Use explosive power tools
└ CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry
- CPCCLDG3001 Licence to perform dogging
- CPCCLHS3001 Licence to operate a personnel and materials hoist
- CPCCLHS3002 Licence to operate a materials hoist
- CPCCLRG3001 Licence to perform rigging basic level
└ CPCCLDG3001 Licence to perform dogging
- CPCCLRG3002 Licence to perform rigging intermediate level
└ CPCCLRG3001 Licence to perform rigging basic level

- CPCCLRG4001 Licence to perform rigging advanced level
└ CPCCLRG3002 Licence to perform rigging intermediate level
- CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level
- CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level
└ CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level
- CPCCLSF4001 Licence to erect, alter and dismantle scaffolding advanced level
└ CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level
- CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry
- MEM05004 Perform routine oxy fuel gas welding
└ MEM11011 Undertake manual handling
└ MEM13015 Work safely and effectively in manufacturing and engineering
└ MEM16006 Organise and communicate information
- MEM05007 Perform manual heating and thermal cutting
└ MEM09002 Interpret technical drawing
└ MEM11011 Undertake manual handling
└ MEM12023 Perform engineering measurements
└ MEM13015 Work safely and effectively in manufacturing and engineering
└ MEM16006 Organise and communicate information
- MEM05012 Perform routine manual metal arc welding
└ MEM11011 Undertake manual handling
└ MEM13015 Work safely and effectively in manufacturing and engineering
└ MEM16006 Organise and communicate information
- MEM09002 Interpret technical drawing
└ MEM12023 Perform engineering measurements
└ MEM12024 Perform computations
└ MEM13015 Work safely and effectively in manufacturing and engineering
└ MEM16006 Organise and communicate information
- MEM11011 Undertake manual handling
└ MEM13015 Work safely and effectively in manufacturing and engineering

	└ MEM16006 Organise and communicate information
MEM12023	Perform engineering measurements
	└ MEM13015 Work safely and effectively in manufacturing and engineering
	└ MEM16006 Organise and communicate information
MEM12024	Perform computations
	└ MEM13015 Work safely and effectively in manufacturing and engineering
	└ MEM16006 Organise and communicate information
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
	└ MEM13015 Work safely and effectively in manufacturing and engineering
NWPCAD008	Monitor and control dam operations
NWPCAD009	Monitor and implement dam maintenance
NWPCAD012	Route floods through storages
RIIHAN309F	Conduct telescopic materials handler operations
RIIMPO304E	Conduct wheel loader operations
RIIMPO308F	Conduct tracked dozer operations
RIIMPO309F	Conduct wheeled dozer operations
RIIMPO318F	Conduct civil construction skid steer loader operations
RIIMPO319E	Conduct backhoe/loader operations
TLILIC0003	Licence to operate a forklift truck
UEECD0019	Fabricate, assemble and dismantle utilities industry components
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEPOPS001	Analyse single protection device operation
UEPOPS004	Carry out operational checks on in-service electrical plant
UEPOPS005	Clean plant and equipment
UEPOPS008	Operate and monitor control room site in a multi-function environment
UEPOPS009	Conduct minor electrical maintenance

UEPOPS010	Conduct minor mechanical maintenance
UEPOPS012	Conduct non-routine operational testing
UEPOPS014	Conduct operational checks on in-service mechanical plant
UEPOPS018	Conduct water conveyance and control
UEPOPS040	Facilitate the use of contingency plans for power generation facilities
UEPOPS041	Facilitate workplace communication
UEPOPS042	Implement dam safety surveillance procedures
UEPOPS047	Maintain quality systems within the team └ UEPOPS003 Apply quality systems to work
UEPOPS059	Manage, operate and monitor a gas turbine unit
UEPOPS062	Monitor and maintain civil assets
UEPOPS063	Monitor and maintain wind farm civil assets
UEPOPS064	Monitor climatic conditions for renewable energy production
UEPOPS067	Monitor the implementation of under frequency load shedding
UEPOPS068	Operate a hydro generator synchronous condenser pump unit
UEPOPS070	Operate and monitor a boiler unit
UEPOPS072	Operate and monitor a hydro turbine
UEPOPS073	Operate and monitor a steam turbine
UEPOPS076	Operate and monitor air conditioning plant and ventilation systems
UEPOPS077	Operate and monitor alkalinity reduction plant
UEPOPS081	Operate and monitor auxiliary steam systems
UEPOPS082	Operate and monitor boiler draught system
UEPOPS083	Operate and monitor boiler steam/water cycle
UEPOPS084	Operate and monitor brine concentrator plant
UEPOPS085	Operate and monitor communications system
UEPOPS086	Operate and monitor compressed air systems

UEPOPS087	Operate and monitor compressed gas systems
UEPOPS088	Operate and monitor condenser and auxiliary cooling systems
UEPOPS090	Operate and monitor dual fuel firing plant
UEPOPS092	Operate and monitor fixed fire protection systems
UEPOPS094	Operate and monitor fuel firing plant - coal
UEPOPS095	Operate and monitor fuel firing plant - gas/oil
UEPOPS096	Operate and monitor fuel supply
UEPOPS098	Operate and monitor gas production plant
UEPOPS099	Operate and monitor generator/alternator
UEPOPS100	Operate and monitor heat exchangers and cooling systems
UEPOPS101	Operate and monitor HRSG hot gas control system
UEPOPS102	Operate and monitor hydro plant auxiliary systems
UEPOPS104	Operate and monitor oil systems
UEPOPS105	Operate and monitor reverse osmosis plant
UEPOPS107	Operate and monitor supervisory control and data acquisition systems
UEPOPS109	Operate and monitor water quality monitoring systems
UEPOPS110	Operate and monitor water systems condensate and feedwater
UEPOPS111	Operate and monitor water treatment plant
UEPOPS112	Operate bulk coal handling plant
UEPOPS113	Operate fabric filter dust collection plant
UEPOPS114	Operate H.V. condition changing apparatus
UEPOPS115	Operate hydroelectric generating plant and auxiliary equipment
UEPOPS116	Operate local H.V. switchgear
UEPOPS117	Operate local L.V. switchgear
UEPOPS118	Operate manual systems
	└ UEPOPS145 Undertake local systems operations

UEPOPS121	Perform plant lubrication
UEPOPS130	Respond to a critical incident
UEPOPS144	Undertake dam safety surveillance
UEPOPS146	Operate and monitor hydro plant/systems
UEPOPS148	Operate and monitor local grid operations control room
UEPOPS150	Operate and monitor multiple facilities from single control room
UEPOPS152	Operate Renewable Energy Generation and Storage systems

Qualification Mapping Information

This qualification supersedes and is equivalent to UEP30122 Certificate III in ESI Generation

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP40122 Certificate IV in ESI Generation

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package to update superseded imported units

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to supervise power generation plant systems activities, remote operation of network equipment, isolation of power generation plant and equipment for work in the electrical supply industry.

It also includes working with civil plant and infrastructure and observing safe working practices.

Combined Specialist - Operations and Systems Operations

This specialisation covers the skills and knowledge required to perform operations and systems operations.

Specialist - Operations

This specialisation covers the skills and knowledge required to perform operations.

Specialist - Systems Operations

This specialisation covers the skills and knowledge required to perform systems operations.

Please note: RTO to insert on the testamur, the specialisation selected from the specialist elective unit group below.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **27 units of competency** for the Combined Specialisation – Operations and Systems Operations

A total of **24 units of competency** for the Specialisation - Operations

A total of **22 units of competency** for the Specialisation - Systems Operations
comprising:

Combined Specialisation - Operations and Systems Operations

- 13 core units listed below; plus
- 5 specialisation units from Group A; plus
- 3 specialisation units from Group B; plus
- 4 elective units from Group C; plus
- 2 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Operations

- 13 core units listed below; plus
- 5 specialisation units from Group A; plus
- 4 elective units from Group C; plus
- 2 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Systems Operations

- 13 core units listed below; plus
- 3 specialisation units from Group B; plus
- 4 elective units from Group C; plus
- 2 elective units may be selected from Group C or with appropriate contextualisation from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite unit is attached to a unit, it is identified by this symbol ⊥.

Core units

- UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
- UEECD0024 Implement and monitor energy sector WHS policies and procedures
- UEPOPS001 Analyse single protection device operation
- UEPOPS003 Apply quality systems to work
- UEPOPS017 Conduct single energy source isolation procedures for permit to work
- UEPOPS031 Coordinate response to critical incidents
⊥ UEPOPS130 Respond to a critical incident
- UEPOPS032 Coordinate team activities

- UEPOPS043 Interpret and analyse multi-operation protection devices
 - └ UEPOPS001 Analyse single protection device operation
- UEPOPS047 Maintain quality systems within the team
 - └ UEPOPS003 Apply quality systems to work
- UEPOPS061 Monitor and implement environmental site plans and procedures
- UEPOPS107 Operate and monitor supervisory control and data acquisition systems
- UEPOPS127 Plan and organise work
- UEPOPS130 Respond to a critical incident

Group A: Specialist Electives - Operations

- UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
 - └ UEPOPS017 Conduct single energy source isolation procedures for permit to work
- UEPOPS028 Coordinate permit to work system
 - └ UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
- UEPOPS075 Operate and monitor a.c. electrical systems
- UEPOPS089 Operate and monitor d.c. electrical systems
- UEPOPS145 Undertake local systems operations

Group B: Specialist Electives - System Operations

- UEPOPS026 Coordinate network/system
- UEPOPS036 Develop H.V. switching programs
- UEPOPS126 Plan a scheduled outage

Group C: General Electives

- BSBHRM413 Support the learning and development of teams and individuals
- BSBINS402 Coordinate workplace information systems
- BSBLDR413 Lead effective workplace relationships
- BSBLDR414 Lead team effectiveness

- BSBOPS402 Coordinate business operational plans
- BSBOPS404 Implement customer service strategies
- BSBP402 Develop personal work priorities
- BSBST401 Promote innovation in team environments
- BSBST402 Implement continuous improvement
- MEM05004 Perform routine oxy fuel gas welding
 - └ MEM11011 Undertake manual handling
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information
- MEM05007 Perform manual heating and thermal cutting
 - └ MEM09002 Interpret technical drawing
 - └ MEM11011 Undertake manual handling
 - └ MEM12023 Perform engineering measurements
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information
- MEM05012 Perform routine manual metal arc welding
 - └ MEM11011 Undertake manual handling
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information
- MEM09002 Interpret technical drawing
 - └ MEM12023 Perform engineering measurements
 - └ MEM12024 Perform computations
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information
- MEM11011 Undertake manual handling
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information
- MEM12023 Perform engineering measurements
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM16006 Organise and communicate information

MEM12024	Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information └ MEM13015 Work safely and effectively in manufacturing and engineering
TAEDEL311	Provide work skill instruction
UEECD0010	Compile and produce an energy sector detailed report
UEECO0001	Estimate electrotechnology projects
UEPOPL003	Licence to operate a reciprocating steam engine
UEPOPL004	Licence to operate a steam turbine
UEPOPS002	Apply environmental and sustainable energy procedures
UEPOPS004	Carry out operational checks on in-service electrical plant
UEPOPS006	Collect and analyse hydrological and meteorological data └ UEPOPS122 Perform process plant inspections
UEPOPS011	Conduct multiple energy source isolation procedures for permit to work └ UEPOPS017 Conduct single energy source isolation procedures for permit to work.
UEPOPS012	Conduct non-routine operational testing
UEPOPS013	Conduct operational checks and carry out corrective action on in-service electrical plant
UEPOPS014	Conduct operational checks on in-service mechanical plant
UEPOPS018	Conduct water conveyance and control
UEPOPS019	Control electrical energy production
UEPOPS021	Control permit to work operations
UEPOPS024	Coordinate first response team operation
UEPOPS025	Coordinate local H.V. networks
UEPOPS026	Coordinate network/system

- UEPOPS027 Coordinate operational strategies for power production
- UEPOPS028 Coordinate permit to work system
 - └ UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
- UEPOPS029 Coordinate photovoltaic solar power plant operations
- UEPOPS033 Coordinate the use of contingency plans
 - └ UEPOPS040 Facilitate the use of contingency plans for power generation facilities
- UEPOPS034 Coordinate wind farm operations
- UEPOPS035 Coordinate workplace communication
 - └ UEPOPS041 Facilitate workplace communication
- UEPOPS036 Develop H.V. switching programs
- UEPOPS037 Ensure compliance with work health and safety policy and procedures
- UEPOPS040 Facilitate the use of contingency plans for power generation facilities
- UEPOPS041 Facilitate workplace communication
- UEPOPS042 Implement dam safety surveillance procedures
- UEPOPS057 Manage system restart
- UEPOPS059 Manage, operate and monitor a gas turbine unit
- UEPOPS060 Monitor and coordinate the operation of a combined cycle gas turbine unit
 - └ UEPOPS059 Manage, operate and monitor a gas turbine unit
 - └ UEPOPS073 Operate and monitor a steam turbine
 - └ UEPOPS095 Operate and monitor fuel firing plant - gas/oil
 - └ UEPOPS101 Operate and monitor HRSG hot gas control system
- UEPOPS062 Monitor and maintain civil assets
- UEPOPS063 Monitor and maintain wind farm civil assets
- UEPOPS064 Monitor climatic conditions for renewable energy production
- UEPOPS065 Monitor implementation of quality control for production and maintenance
 - └ UEPOPS047 Maintain quality systems within the team

- UEPOPS067 Monitor the implementation of under frequency load shedding
- UEPOPS068 Operate a hydro generator synchronous condenser pump unit
- UEPOPS070 Operate and monitor a boiler unit
- UEPOPS071 Operate and monitor a heat recovery steam generator unit
 - └ UEPOPS101 Operate and monitor HRSG hot gas control system
 - └ UEPOPS138 Start and run up gas turbine
 - └ UEPOPS141 Start up a heat recovery steam generator unit
- UEPOPS072 Operate and monitor a hydro turbine
- UEPOPS073 Operate and monitor a steam turbine
- UEPOPS075 Operate and monitor a.c.. electrical systems
- UEPOPS076 Operate and monitor air conditioning plant and ventilation systems
- UEPOPS077 Operate and monitor alkalinity reduction plant
- UEPOPS081 Operate and monitor auxiliary steam systems
- UEPOPS082 Operate and monitor boiler draught system
- UEPOPS083 Operate and monitor boiler steam/water cycle
- UEPOPS084 Operate and monitor brine concentrator plant
- UEPOPS085 Operate and monitor communications system
- UEPOPS086 Operate and monitor compressed air systems
- UEPOPS087 Operate and monitor compressed gas systems
- UEPOPS088 Operate and monitor condenser and auxiliary cooling systems
- UEPOPS089 Operate and monitor d.c.. electrical systems
- UEPOPS090 Operate and monitor dual fuel firing plant
- UEPOPS092 Operate and monitor fixed fire protection systems
- UEPOPS093 Operate and monitor flue gas (NOx) mitigation systems
- UEPOPS094 Operate and monitor fuel firing plant coal
- UEPOPS095 Operate and monitor fuel firing plant -gas/oil

UEPOPS096	Operate and monitor fuel supply
UEPOPS098	Operate and monitor gas production plant
UEPOPS099	Operate and monitor generator/alternator
UEPOPS100	Operate and monitor heat exchangers and cooling systems
UEPOPS101	Operate and monitor HRSG hot gas control system
UEPOPS102	Operate and monitor hydro plant auxiliary systems
UEPOPS103	Operate and monitor hydro unit control and protection systems
UEPOPS104	Operate and monitor oil systems
UEPOPS105	Operate and monitor reverse osmosis plant
UEPOPS108	Operate and monitor system equipment
UEPOPS109	Operate and monitor water quality monitoring systems
UEPOPS110	Operate and monitor water systems condensate and feedwater
UEPOPS111	Operate and monitor water treatment plant
UEPOPS112	Operate bulk coal handling plant
UEPOPS113	Operate fabric filter dust collection plant
UEPOPS114	Operate H.V. condition changing apparatus
UEPOPS115	Operate hydroelectric generating plant and auxiliary equipment
UEPOPS116	Operate local H.V. switchgear
UEPOPS117	Operate local L.V. switchgear
UEPOPS118	Operate manual systems
	└ UEPOPS145 Undertake local systems operations
UEPOPS120	Undertake operational commissioning and decommissioning
UEPOPS122	Perform process plant inspections
UEPOPS123	Perform risk analysis of generation plant
UEPOPS124	Perform switching to a switching program
UEPOPS126	Plan a scheduled outage

- UEPOPS128 Produce maintenance plans for generation production plant
- UEPOPS131 Run up a steam turbine
- UEPOPS132 Schedule generation
- UEPOPS133 Shut down a boiler unit
- UEPOPS134 Shut down a gas turbine
- UEPOPS135 Shut down a heat recovery steam generator unit
 - └ UEPOPS101 Operate and monitor HRSG hot gas control system
 - └ UEPOPS134 Shut down a gas turbine
- UEPOPS136 Shut down a hydro turbine
- UEPOPS137 Shut down a steam turbine
- UEPOPS138 Start and run up gas turbine
- UEPOPS139 Start and run-up a hydro turbine
- UEPOPS140 Start up a boiler unit
- UEPOPS141 Start up a heat recovery steam generator unit
 - └ UEPOPS101 Operate and monitor HRSG hot gas control system
- UEPOPS144 Undertake dam safety surveillance
- UEPOPS145 Undertake local systems operations

Qualification Mapping Information

This qualification replaces and is not equivalent to UEP40218 Certificate IV in ESI Generation - Operations, and UEP40118 Certificate IV in ESI Generation - Systems Operations

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP40322 Certificate IV in ESI Generation Maintenance - Electrical Electronics

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package. With the following changes:

- Minor change to Packaging Rules.
- Superseded units updated.

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to manufacture, fit, assemble, erect, operate, test, find and diagnose faults, and alter and repair electrical and electronic equipment including instrumentation systems. It does not include installation of any electrical wiring systems within an electrical installation as prescribed in current industry standards.

Functions include maintenance planning and scheduling as well as electrical wiring work if it is associated with assembling, maintaining, terminating or altering the wiring between electrical components within power generating plant or machinery. It also includes the supervision of others and the coordination of work activities.

Electrical equipment means any appliance, article, accessory, wire, fitting, cable, conduit or apparatus that generates, uses, conveys or controls, or that is intended to generate, use, convey or control, electricity above extra-low voltage (ELV).

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total **1280 weighting points** comprising:

- **820 core weighting points; plus**
- **460 elective weighting points** from the general elective units listed below.

Choose a total of 460 weighting points from the elective units list below of which:

- between 0 and 220 weighting points can be taken from Group A

- a maximum of 220 weighting points can be selected from Group B
- between 240 and 460 weighting points may be taken from Group C, you may select all your elective units from this group.

Up to 220 weighting points of the general elective units Group A, may be selected, with appropriate contextualisation, from any relevant nationally endorsed Training Package or accredited course, provided that selected units contribute to the vocational outcome of the qualification. Previously assigned weighting points are listed in UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide (CVIG), if not listed weighting points will be 10 points unless directed from the ESI Generation Industry Reference Committee (IRC). The general elective units must contribute to the vocational outcomes of the qualification.

Where imported units are selected, care must be taken to ensure that all prerequisite units specified are complied with.

Where a prerequisite unit is attached to a unit, it is identified by this symbol $\perp$.

Core units	Weighting points
UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work $\perp$ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0019 Fabricate, assemble and dismantle utilities industry components $\perp$ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	40
UEECD0020 Fix and secure electrotechnology equipment $\perp$ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0024 Implement and monitor energy sector WHS policies and procedures	20
UEECD0043 Solve problems in direct current circuits $\perp$ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	80
UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications $\perp$ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	40

UEEEL0003	Arrange circuits, control and protection for electrical installations	40
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0019 Solve problems in direct current (d.c.) circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
UEEEL0005	Develop and connect electrical control circuits	80
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0003 Arrange circuits, control and protection for general electrical installations	
	└ UEEEL0019 Solve problems in direct current (d.c.) machines	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
	└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines	
	└ UEEEL0025 Test and connect transformers	
UEEEL0011	Evaluate performance of low voltage electrical apparatus	60
	└ UEECD0007 Apply work health and safety regulations, codes	

and practices in the workplace

UEEEL0014	Isolate, test and troubleshoot low voltage electrical circuits	40
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEEEL0003 Arrange circuits, control and protection for general electrical installations	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines	
	└ UEEEL0025 Test and Connect Transformers	
	└ UEEEL0047 Identify, shutdown and restart systems with alternate supplies	
UEEEL0020	Solve problems in low voltage a.c. circuits	80
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
UEEEL0021	Solve problems in magnetic and electromagnetic devices	60
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0043 Solve problems in direct current circuits	
UEEEL0023	Terminate cables, cords and accessories for low voltage circuits	40
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards,	

	codes and specifications	
UEEEL0024	Test and connect alternating current (a.c.) rotating machines	80
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0019 Solve problems in direct current (d.c.) machines	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
UEPOPS004	Carry out operational checks on in-service electrical plant	40
UEPOPS021	Control permit to work operations	20
UEPOPS041	Facilitate workplace communication	20
UEPOPS061	Monitor and implement environmental site plans and procedures	20
Group A Elective units		Weighting points
BSBHRM413	Support the learning and development of teams and individuals	40
BSBINS402	Coordinate workplace information systems	40
BSBLDR413	Lead effective workplace relationships	50
BSBLDR414	Lead team effectiveness	50
BSBOPS203	Deliver a service to customers	20
BSBOPS402	Coordinate business operational plans	40
BSBOPS404	Implement customer service strategies	40
BSBPEF402	Develop personal work priorities	40
BSBST401	Promote innovation in team environments	40

BSBSTR402	Implement continuous improvement	40
ICTICT215	Operate digital media technology package	20
TAEDEL311	Provide work skill instruction	40
UEECD0010	Compile and produce an energy sector detailed report	60
UEECO0002	Maintain documentation	20
UEECS0033	Use engineering applications software on personal computers	40

Group B Elective units**Weighting points**

UEEDV0005	Install and maintain cabling for multiple access to telecommunication services	120
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEEDV0006	Install and modify optical fibre performance data communication cabling	40
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEDV0005 Install and maintain cabling for multiple access to telecommunication services	
UEEIC0022	Install instrumentation and control apparatus and associated equipment	20
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	

	└ UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals	
UEEIC0023	Install instrumentation and control cabling and tubing	20
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals	
UEEIC0047	Use instrumentation drawings, specifications, standards and equipment manuals	40
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEPMNT346	Maintain electrical equipment	40
	└ UEEEL0003 - Arrange circuits, control and protection for electrical installations Arrange circuits, control and protection for general electrical installations └ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0025 Test and Connect Transformers	
UEPMNT347	Maintain complex electrical equipment	60
	└ UEPMNT346 Maintain electrical equipment	

UEPMNT348	Maintain electrical electronic equipment	40
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers	
UEPMNT350	Modify electrical equipment	40
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers	
UEPMNT351	Test and commission electrical equipment	40
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	

	└ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers	
UEPMNT355	Install complex electronic instrumentation equipment	40
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEIC0022 Install instrumentation and control apparatus and associated equipment	
UEPMNT356	Maintain instrumentation equipment	40
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEPMNT357	Diagnose and repair faults in instrumentation equipment	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	

	└ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEPMNT358	Modify instrumentation equipment	40
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEPMNT359	Test and commission instrumentation equipment	40
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
UEPMNT366	Maintain power plant inverter systems	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers	

UEPOPS003	Apply quality systems to work	20
UEPOPS017	Conduct single energy source isolation procedures for permit to work	40
UEPOPS047	Maintain quality systems within the team	20
	└ UEPOPS003 Apply quality systems to work	

Group C Elective units**Weighting points**

UEECO0001	Estimate electrotechnology projects	40
UEEEL0025	Test and connect transformers	80
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0019 Solve problems in direct current (d.c.) machines	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
UEEEL0047	Identify, shut down and restart systems with alternate supplies	20
	└ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace	
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0019 Solve problems in direct current (d.c.) machines	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic	

devices

└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEPMNT410 Diagnose and repair faults in electronic equipment 60

└ UEECD0019 Fabricate, assemble and dismantle utilities industry components

└ UEECD0020 Fix and secure electrotechnology equipment

└ UEECD0043 Solve problems in direct current circuits

└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

└ UEEEL0003 Arrange circuits, control and protection for electrical installations

└ UEEEL0011 Evaluate performance of low voltage electrical apparatus

└ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

└ UEEEL0020 Solve problems in low voltage a.c. circuits

└ UEEEL0021 Solve problems in magnetic and electromagnetic devices

└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines

└ UEEEL0025 Test and Connect Transformers

UEPMNT411 Diagnose and repair faults in complex electrical equipment 60

└ UEECD0019 Fabricate, assemble and dismantle utilities industry components

└ UEECD0020 Fix and secure electrotechnology equipment

└ UEECD0043 Solve problems in direct current circuits

└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

└ UEEEL0003 Arrange circuits, control and protection for electrical installations

└ UEEEL0011 Evaluate performance of low voltage electrical apparatus

└ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

	└ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers	
UEPMNT412	Modify complex electrical equipment	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers └ UEPMNT350 Modify electrical equipment	
UEPMNT414	Test and commission complex electrical equipment	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	

- └ UEEEL0003 Arrange circuits, control and protection for electrical installations
 - └ UEEEL0011 Evaluate performance of low voltage electrical apparatus
 - └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits
 - └ UEEEL0020 Solve problems in low voltage a.c. circuits
 - └ UEEEL0021 Solve problems in magnetic and electromagnetic devices
 - └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits
 - └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines
 - └ UEEEL0025 Test and Connect Transformers
 - └ UEPMNT351 Test and commission electrical equipment
- UEPMNT417 Inspect electrical generators and diagnose faults 80
- └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - └ UEECD0020 Fix and secure electrotechnology equipment
 - └ UEECD0043 Solve problems in direct current circuits
 - └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
 - └ UEEEL0003 Arrange circuits, control and protection for electrical installations
 - └ UEEEL0011 Evaluate performance of low voltage electrical apparatus
 - └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits
 - └ UEEEL0020 Solve problems in low voltage a.c. circuits
 - └ UEEEL0021 Solve problems in magnetic and electromagnetic devices
 - └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits
 - └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines
 - └ UEEEL0025 Test and Connect Transformers
 - └ UEPMNT351 Test and commission electrical equipment

UEPMNT421	Conduct technical inspection of process plant and equipment	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0003 Arrange circuits, control and protection for electrical installations	
	└ UEEEL0011 Evaluate performance of low voltage electrical apparatus	
	└ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
	└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines	
	└ UEEEL0025 Test and Connect Transformers	
	└ UEPMNT351 Test and commission electrical equipment	
UEPMNT422	Conduct performance testing on process plant and equipment	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0043 Solve problems in direct current circuits	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEEEL0003 Arrange circuits, control and protection for electrical installations	
	└ UEEEL0011 Evaluate performance of low voltage electrical apparatus	
	└ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits	
	└ UEEEL0020 Solve problems in low voltage a.c. circuits	
	└ UEEEL0021 Solve problems in magnetic and electromagnetic	

	devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
	└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines	
	└ UEEEL0025 Test and Connect Transformers	
	└ UEPMNT351 Test and commission electrical equipment	
UEPMNT425	Maintain complex instrumentation equipment	80
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEPMNT356 Maintain instrumentation equipment	
UEPMNT427	Diagnose and repair faults in complex instrumentation equipment	80
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEPMNT356 Maintain instrumentation equipment	
UEPMNT428	Modify complex instrumentation equipment	80
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEPMNT356 Maintain instrumentation equipment	
UEPMNT430	Test and commission complex instrumentation equipment	80
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components	
	└ UEECD0020 Fix and secure electrotechnology equipment	
	└ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	
	└ UEPMNT359 Test and commission instrumentation equipment	

UEPMNT433	Conduct routine generator electrical maintenance	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) rotating machines └ UEEEL0025 Test and Connect Transformers └ UEPMNT346 Maintain electrical equipment	
UEPMNT440	Diagnose and repair faults in power plant inverter systems	60
	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic	

	devices	
	└ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits	
	└ UEEEL0024 Test and connect alternating current (a.c.) rotating machines	
	└ UEEEL0025 Test and Connect Transformers	
	└ UEPMNT366 Maintain power plant inverter systems	
UEPOPS011	Conduct multiple energy source isolation procedures for permit to work	40
	└ UEPOPS017 Conduct single energy source isolation procedures for permit to work	
UEPOPS127	Plan and organise work	30

Qualification Mapping Information

This qualification replaces and is equivalent to UEP40318 Certificate IV in ESI Generation Maintenance - Electrical Electronics

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP40422 Certificate IV in ESI Generation Maintenance (Fabrication)

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package. With the following changes:

- Minor change to Packaging Rules.
- Superseded units updated

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to complete power generation work functions in the electrical supply industry. Functions include installation, fabrication, repair and maintenance of industrial pressure vessels and associated pipework, coded welding, welding supervision, general fabrication and the observation of safe working practices. It also includes the supervision of others and the coordination of work activities.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total **1280 weighting points** comprising:

- **760 core weighting points**; plus
- **520 elective weighting points from the general elective units** listed below.

Choose a total of 520 weighting point from the general elective units list below of which:

- between 0 and 220 weighting points can be taken from Group A
- between 0 and 400 weighting points can be selected from Group B
- between 120 and 520 weighting points may be taken from Group C, you may select all your elective units from this group.

Up to 220 weighting points of the general elective units Group A, may be selected, with appropriate contextualisation, from any relevant nationally endorsed Training Package or accredited course, provided that selected units contribute to the vocational outcome of the qualification. Previously assigned weighting points are listed in UEP Electricity Supply

Industry - Generation Sector Training Package Companion Volume Implementation Guide (CVIG), if not listed weighting points will be 10 points unless directed from the ESI Generation Industry Reference Committee (IRC). The general elective units must contribute to the vocational outcomes of the qualification.

Where imported units are selected, care must be taken to ensure that all prerequisite units specified are complied with.

Where a prerequisite unit is attached to a unit, it is identified by this symbol ⊥.

Core units		Weighting points
MEM05007	Perform manual heating and thermal cutting ⊥ MEM09002 Interpret technical drawing ⊥ MEM11011 Undertake Manual Handling ⊥ MEM12023 Perform engineering measurements ⊥ MEM13015 Work safely and effectively in manufacturing and engineering ⊥ MEM16006 Organise and communicate information	20
MEM05012	Perform routine manual metal arc welding ⊥ MEM11011 Undertake Manual Handling ⊥ MEM13015 Work safely and effectively in manufacturing and engineering ⊥ MEM16006 Organise and communicate information	20
MEM05015	Weld using manual metal arc welding process ⊥ MEM05012 Perform routine manual metal arc welding ⊥ MEM05051 Select welding processes ⊥ MEM05052 Apply safe welding practices ⊥ MEM09002 Interpret technical drawing ⊥ MEM11011 Undertake Manual Handling ⊥ MEM12023 Perform engineering measurements ⊥ MEM12024 Perform Computations ⊥ MEM13015 Work safely and effectively in manufacturing and engineering ⊥ MEM14006 Plan work activities ⊥ MEM16006 Organise and communicate information ⊥ MEM18001 Use hand tools ⊥ MEM18002 Use power tools/hand held operations	40

MEM05016	Perform advanced welding using manual metal arc welding process	40
	└ MEM05007 Perform manual heating and thermal cutting	
	└ MEM05012 Perform routine manual metal arc welding	
	└ MEM05015 Weld using manual metal arc welding process	
	└ MEM05051 Select welding processes	
	└ MEM05052 Apply safe welding practices	
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform Computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM14006 Plan work activities	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
MEM05017	Weld using gas metal arc welding process	40
	└ MEM05050 Perform routine gas metal arc welding	
	└ MEM05051 Select welding processes	
	└ MEM05052 Apply safe welding practices	
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform Computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM14006 Plan work activities	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
MEM05018	Perform advanced welding using gas metal arc welding process	40
	└ MEM05007 Perform manual heating and thermal cutting	

	└ MEM05017 Weld using gas metal arc welding process └ MEM05050 Perform routine gas metal arc welding └ MEM05051 Select welding processes └ MEM05052 Apply safe welding practices └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations	
MEM05024	Perform welding supervision └ MEM05026 Apply welding principles └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information	120
MEM05026	Apply welding principles └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information	40
MEM05050	Perform routine gas metal arc welding	20

	└ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM05051	Select welding processes	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM05052	Apply safe welding practices	40
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM09002	Interpret technical drawing	40
	└ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM12023	Perform engineering measurements	50
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM18001	Use hand tools	20
	└ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM18002	Use power tools/hand held operations	20
	└ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace	20

UEECD0024	Implement and monitor energy sector WHS policies and procedures	20
UEPMNT302	Install and maintain industrial pipe work	40
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
	└ MEM18003 Use tools for precision work	
	└ MEM18006 Repair and fit engineering components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPOPS003	Apply quality systems to work	20
UEPOPS021	Control permit to work operations	20
UEPOPS047	Maintain quality systems within the team	20
	└ UEPOPS003 Apply quality systems to work	
UEPOPS061	Monitor and implement environmental site plans and procedures	20
UEPOPS127	Plan and organise work	30
Group A elective units		Weighting points
BSBHRM413	Support the learning and development of teams and individuals	40
BSBINS402	Coordinate workplace information systems	40
BSBLDR413	Lead effective workplace relationships	50
BSBLDR414	Lead team effectiveness	50
BSBOPS402	Coordinate business operational plans	40
BSBOPS404	Implement customer service strategies	40
BSBPEF402	Develop personal work priorities	40
BSBST401	Promote innovation in team environments	40
BSBST402	Implement continuous improvement	40

CPCCCM2007	Use explosive power tools	10-
	└ CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry	
CPCCLDG3001	Licence to perform dogging	30
CPCCLRG3001	Licence to perform rigging basic level	40
	└ CPCCLDG3001 Licence to perform dogging	
CPCCLRG3002	Licence to perform rigging intermediate level	40
	└ CPCCLRG3001 Licence to perform rigging basic level	
CPCCLSF2001	Licence to erect, alter and dismantle scaffolding basic level	40
RIIHAN309F	Conduct telescopic materials handler operations	80
TAEDEL311	Provide work skill instruction	40
TLILIC0003	Licence to operate a forklift truck	40
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)	30
TLILIC0024	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	40

Group B Elective units**Weighting points**

MEM05004	Perform routine oxy fuel gas welding	20
	└ MEM11011 Undertake Manual Handling	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM05005	Carry out mechanical cutting	20
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
MEM05011	Assemble fabricated components	80

- └ MEM05005 Carry out mechanical cutting
 - └ MEM05007 Perform manual heating and thermal cutting
 - └ MEM05051 Select welding processes
 - └ MEM05052 Apply safe welding practices
 - └ MEM09002 Interpret technical drawing
 - └ MEM11011 Undertake Manual Handling
 - └ MEM12023 Perform engineering measurements
 - └ MEM12024 Perform computations
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM14006 Plan work activities
 - └ MEM16006 Organise and communicate information
 - └ MEM18001 Use hand tools
 - └ MEM18002 Use power tools/hand held operations
- Plus, one or more of the following, including prerequisites:
- └ MEM05015 Weld using manual metal arc welding process
 - └ MEM05017 Weld using gas metal arc welding process
 - └ MEM05019 Weld using gas tungsten arc welding process
 - └ MEM05055 Weld using oxy fuel gas process

MEM05019	Weld using gas tungsten arc welding process	40
	└ MEM05049 Perform routine gas tungsten arc welding	
	└ MEM05051 Select welding processes	
	└ MEM05052 Apply safe welding practices	
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM14006 Plan work activities	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	

MEM05036	Repair, replace and/or modify fabrications	40
	└ MEM05005 Carry out mechanical cutting └ MEM05007 Perform manual heating and thermal cutting └ MEM05011 Assemble fabricated components └ MEM05051 Select welding processes └ MEM05052 Apply safe welding practices └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations Plus one or more of the following, including their prerequisites: └ MEM05015 Weld using manual metal arc welding process └ MEM05017 Weld using gas metal arc welding process └ MEM05019 Weld using gas tungsten arc welding process └ MEM05047 Weld using flux core arc welding process └ MEM05055 Weld using oxy fuel gas arc welding process	
MEM05049	Perform routine gas tungsten arc welding	20
	└ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM11011	Undertake manual handling	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM12007	Mark off/out structural fabrications and shapes	40

	└ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information	
MEM12024	Perform computations	30
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM13015	Work safely and effectively in manufacturing and engineering	20
MEM14006	Plan work activities	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM16006	Organise and communicate information	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
UEPMNT340	Fabricate metal structures and components	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Repair and fit engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPOPS017	Conduct single energy source isolation procedures for permit to work	40
UEPOPS041	Facilitate workplace communication	20

Group C Elective units**Weighting
points**

MEM05020	Perform advanced welding using gas tungsten arc welding process L MEM05007 Perform manual heating and thermal cutting L MEM05019 Weld using gas tungsten arc welding process L MEM05049 Perform routine gas tungsten arc welding L MEM05051 Select welding processes L MEM05052 Apply safe welding practices L MEM09002 Interpret technical drawing L MEM11011 Undertake Manual Handling L MEM12023 Perform engineering measurements L MEM12024 Perform computations L MEM13015 Work safely and effectively in manufacturing and engineering L MEM14006 Plan work activities L MEM16006 Organise and communicate information L MEM18001 Use hand tools L MEM18002 Use power tools/hand held operations	40
MEM05022	Perform advanced welding using oxy acetylene welding process L MEM05004 Perform routine oxy fuel gas welding L MEM05007 Perform manual heating and thermal cutting L MEM05051 Select welding processes L MEM05052 Apply safe welding practices L MEM05055 Weld using oxy fuel gas arc welding process L MEM09002 Interpret technical drawing L MEM11011 Undertake Manual Handling L MEM12023 Perform engineering measurements L MEM12024 Perform computations L MEM13015 Work safely and effectively in manufacturing and engineering L MEM14006 Plan work activities L MEM16006 Organise and communicate information	60

	└ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations	
MEM05043	Perform welds to code standards using gas metal arc welding process	60
	└ MEM05007 Perform manual heating and thermal cutting └ MEM05017 Weld using gas metal arc welding process └ MEM05018 Perform advanced welding using gas metal arc welding process └ MEM05026 Apply welding principles └ MEM05050 Perform routine gas metal arc welding └ MEM05051 Select welding processes └ MEM05052 Apply safe welding practices └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations	
MEM05044	Perform welds to code standards using gas tungsten arc welding process	60
	└ MEM05007 Perform manual heating and thermal cutting └ MEM05019 Perform advanced welding using gas tungsten arc welding process └ MEM05020 Perform advanced welding using gas tungsten arc welding process └ MEM05026 Apply welding principles └ MEM05049 Perform routine gas tungsten arc welding └ MEM05051 Select welding processes └ MEM05052 Apply safe welding practices └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling	

	└ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations	
MEM05045	Perform pipe welds to code standards using manual metal arc welding process └ MEM05007 Perform manual heating and thermal cutting └ MEM05012 Perform routine manual metal arc welding └ MEM05015 Weld using manual metal arc welding process └ MEM05016 Perform advanced welding using manual metal arc welding process └ MEM05026 Apply welding principles └ MEM05051 Select welding processes └ MEM05052 Apply safe welding practices └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations	60
MEM05046	Perform welds to code standards using manual metal arc welding process └ MEM05007 Perform manual heating and thermal cutting └ MEM05012 Perform routine manual metal arc welding └ MEM05015 Weld using manual metal arc welding process └ MEM05016 Perform advanced welding using manual metal arc welding process	60

- └ MEM05026 Apply welding principles
 - └ MEM05051 Select welding processes
 - └ MEM05052 Apply safe welding practices
 - └ MEM09002 Interpret technical drawing
 - └ MEM11011 Undertake Manual Handling
 - └ MEM12023 Perform engineering measurements
 - └ MEM12024 Perform computations
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM14006 Plan work activities
 - └ MEM16006 Organise and communicate information
 - └ MEM18001 Use hand tools
 - └ MEM18002 Use power tools/hand held operations
- UEPMNT421 Conduct technical inspection of process plant and equipment 60
- └ UEECD0019 Fabricate, assemble and dismantle utilities industry components
 - └ UEECD0020 Fix and secure electrotechnology equipment
 - └ UEECD0043 Solve problems in direct current circuits
 - └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
 - └ UEEEL0003 Arrange circuits, control and protection for general electrical installations
 - └ UEEEL0011 Evaluate performance of low voltage electrical apparatus
 - └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits
 - └ UEEEL0020 Solve problems in low voltage a.c. circuits
 - └ UEEEL0021 Solve problems in magnetic and electromagnetic devices
 - └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits
 - └ UEEEL0024 Test and connect alternating current (a.c.) machines
 - └ UEEEL0025 Test and Connect Transformers
 - └ UEPMNT351 Test and commission electrical equipment
- UEPMNT422 Conduct performance testing on process plant and equipment 60

	└ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for general electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) machines └ UEEEL0025 Test and Connect Transformers └ UEPMNT351 Test and commission electrical equipment	
UEPOPS011	Conduct multiple energy source isolation procedures for permit to work └ UEPOPS017 Conduct single energy source isolation procedures for permit to work	40

Qualification Mapping Information

This qualification replaces and is equivalent to UEP40418 Certificate IV in ESI Generation Maintenance (Fabrication)

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP40522 Certificate IV in ESI Generation Maintenance (Mechanical)

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package. With the following changes:

- Minor change to Packaging Rules
- Superseded units updated

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to complete power generation work functions in the electrical supply industry (ESI). Functions include the installation, repair and maintenance of plant and mechanical systems; and maintenance planning and scheduling. It also includes observation of safe working practices, supervision of others and the coordination of work activities.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total **1280 weighting points** comprising:

770 core weighting points; plus

510 elective weighting points from the general elective units listed below.

Choose a total of 510 weighting points from the general elective units list below of which:

- between 0 and 220 weighting points can be taken from Group A
- a maximum of 310 weighting points may be taken from Group B
- between 200 and 510 weighting points may be taken from Group C, you may select all your elective units from this group.

Up to 220 weighting points of the general elective units Group A, may be selected, with appropriate contextualisation, from any relevant nationally endorsed Training Package or accredited course, provided that selected units contribute to the vocational outcome of the qualification. Previously assigned weighting points are listed in UEP Electricity Supply

Industry - Generation Sector Training Package Companion Volume Implementation Guide (CVIG), if not listed weighting points will be 10 points unless directed from the ESI Generation Industry Reference Committee (IRC). The general elective units must contribute to the vocational outcomes of the qualification.

Where imported units are selected, care must be taken to ensure that all prerequisite units specified are complied with.

Where a prerequisite unit is attached to a unit, it is identified by this symbol ⊥.

Core units		Weighting points
MEM07005	Perform general machining ⊥ MEM09002 Interpret technical drawing ⊥ MEM11011 Undertake Manual Handling ⊥ MEM12023 Perform engineering measurements ⊥ MEM12024 Perform Computations ⊥ MEM13015 Work safely and effectively in manufacturing and engineering ⊥ MEM14006 Plan work activities ⊥ MEM16006 Organise and communicate information ⊥ MEM18001 Use hand tools	80
MEM07006	Perform lathe operations ⊥ MEM07005 Perform general machining ⊥ MEM09002 Interpret technical drawing ⊥ MEM11011 Undertake Manual Handling ⊥ MEM12023 Perform engineering measurements ⊥ MEM12024 Perform Computations ⊥ MEM13015 Work safely and effectively in manufacturing and engineering ⊥ MEM14006 Plan work activities ⊥ MEM16006 Organise and communicate information ⊥ MEM18001 Use hand tools	40
MEM07007	Perform milling operations ⊥ MEM07005 Perform general machining ⊥ MEM09002 Interpret technical drawing ⊥ MEM11011 Undertake Manual Handling	40

	└ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools	
MEM07008	Perform grinding operations └ MEM07005 Perform general machining └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools	40
MEM09002	Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	40
MEM12003	Perform precision mechanical measurement └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	20
MEM12023	Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	50

MEM12024	Perform computations	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM18001	Use hand tools	20
	└ MEM11011 Undertake Manual Handling	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM18002	Use power tools/hand held operations	20
	└ MEM11011 Undertake Manual Handling	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM18003	Use tools for precision work	40
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
MEM18006	Perform precision fitting of engineering components	40
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform Computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM14006 Plan work activities	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	

	└ MEM18003 Use tools for precision work └ MEM18055 Dismantle, replace and assemble engineering components	
MEM18007	Maintain and repair mechanical drives and mechanical transmission assemblies	40
	└ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
MEM18009	Perform precision levelling and alignment of machines and engineering components	40
	└ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble	

	engineering components	
MEM18055	Dismantle, replace and assemble engineering components	30
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12023 Perform engineering measurements	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace	20
UEECD0024	Implement and monitor energy sector WHS policies and procedures	20
UEPOPS003	Apply quality systems to work	20
UEPOPS021	Control permit to work operations	30
UEPOPS041	Facilitate workplace communication	20
UEPOPS047	Maintain quality systems within the team	20
	└ UEPOPS003 Apply quality systems to work	
UEPOPS061	Monitor and implement environmental site plans and procedures	20
UEPOPS127	Plan and organise work	30
Group A Elective units		Weighting points
BSBHRM413	Support the learning and development of teams and individuals	40
BSBINS402	Coordinate workplace information systems	40
BSBLDR413	Lead effective workplace relationships	50
BSBLDR414	Lead team effectiveness	50
BSBOPS402	Coordinate business operational plans	40

BSBOPS404	Implement customer service strategies	40
BSBPEF402	Develop personal work priorities	40
BSBSTR401	Promote innovation in team environments	40
BSBSTR402	Implement continuous improvement	40
CPCCCM2007	Use explosive power tools	10
	└ CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry	
CPCCLDG3001	Licence to perform dogging	30
CPCCLRG3001	Licence to perform rigging basic level	40
	└ CPCCLDG3001 Licence to perform dogging	
CPCCLRG3002	Licence to perform rigging intermediate level	40
	└ CPCCLRG3001 Licence to perform rigging basic level	
CPCCLSF2001	Licence to erect, alter and dismantle scaffolding basic level	40
MEM09003	Prepare basic engineering drawing	80
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform Computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM09004	Perform electrical or electronic detail drafting	80
	└ MEM09002 Interpret technical drawing	
	└ MEM09003 Prepare basic engineering drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM12024 Perform Computations	
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
	└ MEM16006 Organise and communicate information	
MEM09005	Perform basic engineering detail drafting	80
	└ MEM09002 Interpret technical drawing	
	└ MEM09003 Prepare basic engineering drawing	

	└ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM09006	Perform advanced engineering detail drafting └ MEM09002 Interpret technical drawing └ MEM09003 Prepare basic engineering drawing └ MEM09005 Perform basic engineering detail drafting └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	40
RIIHAN309F	Conduct telescopic materials handler operations	80
TAEDEL311	Provide work skill instruction	40
TLILIC0003	Licence to operate a forklift truck	40
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)	30
TLILIC0040	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)	60
TLILIC0024	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)	40
Group B Elective units		Weighting points
MEM05004	Perform routine oxy fuel gas welding └ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	20
MEM05007	Perform manual heating and thermal cutting └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling	20

	└ MEM12023 Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM05012	Perform routine manual metal arc welding	20
	└ MEM11011 Undertake Manual Handling └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM11011	Undertake manual handling	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM13015	Work safely and effectively in manufacturing and engineering	20
MEM14006	Plan work activities	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information	
MEM16006	Organise and communicate information	20
	└ MEM13015 Work safely and effectively in manufacturing and engineering	
MEM18010	Perform equipment condition monitoring and recording	40
	└ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18055 Dismantle, replace and assemble engineering components	
MEM18018	Maintain pneumatic system components	40

	└ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
MEM18020	Maintain hydraulic system components └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12023 Perform engineering measurements └ MEM12024 Perform Computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	40
UEPMNT302	Install and maintain industrial pipe work └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools	40

	└ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT303	Maintain mechanical valves	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT304	Maintain mechanical pumps	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT305	Maintain industrial fans	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble	

	engineering components	
UEPMNT307	Maintain industrial screens, strainers and filters	20
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
	└ MEM18003 Use tools for precision work	
	└ MEM18006 Perform precision fitting of engineering components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT308	Maintain conveyors and associated equipment	40
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
	└ MEM18006 Perform precision fitting of engineering components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT309	Maintain material feeders	40
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
	└ MEM18003 Use tools for precision work	
	└ MEM18006 Perform precision fitting of engineering components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT310	Maintain material crushers	40
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	

	└ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT312	Maintain industrial pressure vessels └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	80
UEPMNT314	Maintain hydro turbines	100
UEPMNT317	Diagnose and repair faults in mechanical equipment └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components	40
UEPMNT318	Conduct generator mechanical maintenance └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering	80

	components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT340	Fabricate metal structures and components	40
	└ MEM09002 Interpret technical drawing	
	└ MEM12023 Perform engineering measurements	
	└ MEM18001 Use hand tools	
	└ MEM18002 Use power tools/hand held operations	
	└ MEM18003 Use tools for precision work	
	└ MEM18006 Perform precision fitting of engineering components	
	└ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT367	Install and commission stationary gas fuelled reciprocating engines	60
	└ CPCCWHS1001 Prepare to work safely in the construction industry	
	└ HLTAID009 Provide cardiopulmonary resuscitation	
UEPMNT368	Repair and maintain stationary gas fuelled reciprocating engines	60
	└ CPCCWHS1001 Prepare to work safely in the construction industry	
	└ HLTAID009 Provide cardiopulmonary resuscitation	
UEPOPS017	Conduct single energy source isolation procedures for permit to work	40
Group C Elective units		Weighting points
MEM07011	Perform complex milling operations	40
	└ MEM07005 Perform general machining	
	└ MEM07007 Perform milling operations	
	└ MEM09002 Interpret technical drawing	
	└ MEM11011 Undertake Manual Handling	
	└ MEM12003 Perform precision mechanical measurement	
	└ MEM12023 Perform engineering measurements	

	└ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools	
MEM07012	Perform complex grinding operations └ MEM07005 Perform general machining └ MEM07008 Perform grinding operations └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12003 Perform precision mechanical measurement └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools	40
MEM07021	Perform complex lathe operations └ MEM07005 Perform general machining └ MEM07006 Perform lathe operations └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12003 Perform precision mechanical measurement └ MEM12023 Perform engineering measurements └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools	40
MEM18019	Maintain pneumatic systems	40

	└ MEM12023 Perform engineering measurements └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18018 Maintain pneumatic system components └ MEM18055 Dismantle, replace and assemble engineering components	
MEM18021	Maintain hydraulic systems └ MEM12023 Perform engineering measurements └ MEM09002 Interpret technical drawing └ MEM11011 Undertake Manual Handling └ MEM12024 Perform computations └ MEM13015 Work safely and effectively in manufacturing and engineering └ MEM14006 Plan work activities └ MEM16006 Organise and communicate information └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18020 Maintain hydraulic system components └ MEM18055 Dismantle, replace and assemble engineering components	40
MEM18022	Maintain fluid power controls └ MEM09002 Interpret technical drawing	80

- └ MEM11011 Undertake Manual Handling
 - └ MEM12023 Perform engineering measurements
 - └ MEM12024 Perform computations
 - └ MEM13015 Work safely and effectively in manufacturing and engineering
 - └ MEM14006 Plan work activities
 - └ MEM16006 Organise and communicate information
 - └ MEM18001 Use hand tools
 - └ MEM18002 Use power tools/hand held operations
 - └ MEM18003 Use tools for precision work
 - └ MEM18006 Perform precision fitting of engineering components
 - └ MEM18055 Dismantle, replace and assemble engineering components
- Plus, one or more of the following, including their prerequisites:
- └ MEM18019 Maintain pneumatic systems
 - └ MEM18021 Maintain hydraulic systems

UEPMNT401	Install and maintain complex mechanical seals └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components └ UEPMNT304 Maintain mechanical pumps	40
UEPMNT402	Conduct complex levelling and alignment └ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work	40

	└ MEM18006 Perform precision fitting of engineering components └ MEM18009 Perform levelling and alignment of machines and engineering components └ MEM18055 Dismantle, replace and assemble engineering components	
UEPMNT403	Maintain complex mechanical valves	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components └ UEPMNT303 Maintain mechanical valves	
UEPMNT404	Maintain complex mechanical pumps	40
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18002 Use power tools/hand held operations └ MEM18001 Use hand tools └ MEM18003 Use tools for precision work └ MEM18006 Perform precision fitting of engineering components └ MEM18055 Dismantle, replace and assemble engineering components └ UEPMNT304 Maintain mechanical pumps	
UEPMNT408	Install hydro turbines	100
	└ MEM09002 Interpret technical drawing └ MEM12023 Perform engineering measurements └ MEM18001 Use hand tools └ MEM18002 Use power tools/hand held operations └ MEM18003 Use tools for precision work └ MEM18006 Repair and fit engineering components	

	└ MEM18009 Perform levelling and alignment of machines and engineering components └ MEM18055 Dismantle, replace and assemble engineering components └ UEPMNT402 Conduct complex levelling and alignment	
UEPMNT419	Perform civil drafting └ MEM09002 Interpret technical drawing └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications	60
UEPMNT421	Conduct technical inspection of process plant and equipment └ UEECD0019 Fabricate, assemble and dismantle utilities industry components └ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for general electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) machines └ UEEEL0025 Test and Connect Transformers └ UEPMNT351 Test and commission electrical equipment	60
UEPMNT422	Conduct performance testing on process plant and equipment └ UEECD0019 Fabricate, assemble and dismantle utilities industry components	60

	└ UEECD0020 Fix and secure electrotechnology equipment └ UEECD0043 Solve problems in direct current circuits └ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications └ UEEEL0003 Arrange circuits, control and protection for general electrical installations └ UEEEL0011 Evaluate performance of low voltage electrical apparatus └ UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits └ UEEEL0020 Solve problems in low voltage a.c. circuits └ UEEEL0021 Solve problems in magnetic and electromagnetic devices └ UEEEL0023 Terminate cables, cords and accessories for low voltage circuits └ UEEEL0024 Test and connect alternating current (a.c.) machines └ UEEEL0025 Test and Connect Transformers └ UEPMNT351 Test and commission electrical equipment	
UEPOPS011	Conduct multiple energy source isolation procedures for permit to work └ UEPOPS017 Conduct single energy source isolation procedures for permit to work	40

Qualification Mapping Information

This qualification supersedes and is equivalent to UEP40518 Certificate IV in ESI Generation Maintenance (Mechanical)

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP40622 Certificate IV in Wind Power Generation

Modification History

Release 2. This is the second release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package to update superseded imported units.

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

This qualification covers the skills and knowledge required to work in wind power generation. The skills and knowledge associated with this qualification are intended to apply to a wide range of wind power generation work, including wind farm maintenance, wind turbine maintenance and repair.

When electrical units are selected, the student must have the appropriate regulatory licence to undertake these units.

Licensing/Certification Information

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this qualification. For this qualification, persons undertaking any the following general electives units:

UEPMNT005 Diagnose and repair faults in wind turbine control systems

UEPMNT006 Diagnose and repair faults in wind turbine electrical systems

UEPMNT011 Maintain wind turbine electrical systems

UEPMNT014 Test and commission wind turbines

must have one of the following as an entry requirement:

Unrestricted Electrical Licence issued in an Australian State or Territory, or

Electrical Fitter Occupational Licence issued in an Australian State or Territory, or

UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Entry Requirements

As identified in the Licensing/Certification Information

Packaging Rules

A total of **19 units** comprising:

- **12 core units** listed below; **plus**
- **7 electives units** listed below.

2 elective units may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with.

Where a prerequisite unit is attached to a unit, it is identified by this symbol ⊥.

Core units

HLTAID009	Provide cardiopulmonary resuscitation
HLTAID011	Provide First Aid
HLTWHS005	Conduct manual tasks safely
PUAFER008	Confine small emergencies in a facility
RIIWHS204E	Work safely at heights
UEPMNT009	Maintain large scale wind turbines
UEPMNT012	Maintain wind turbine mechanical systems
UEPMNT007	Diagnose and repair mechanical systems faults in wind turbines ⊥ UEPMNT012 Maintain wind turbine mechanical systems
UEPOPS011	Conduct multiple energy source isolation procedures for permit to work ⊥ UEPOPS017 Conduct single energy source isolation procedures for permit to work
UEPOPS017	Conduct single energy source isolation procedures for permit to work
UEPOPS107	Operate and monitor supervisory control and data acquisition systems
PUASAR032	Undertake vertical rescue ⊥ PUASAR022 Participate in a rescue operation

General Elective units

CPCCLDG3001	Licence to perform dogging
CPCCLRG3001	Licence to perform rigging basic level

	└ CPCCLDG3001 Licence to perform dogging
ICTICT214	Operate application software packages
MSMPER200	Work in accordance with an issued permit
MSMPER205	Enter confined space └ MSMPER200 Work in accordance with an issued permit
PUASAR022	Participate in a rescue operation └ HLTAID011 Provide First Aid
RIIWHS202E	Enter and work in confined spaces
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECO0002	Maintain documentation
UEPMNT002	Carry out routine work activities in an ESI large scale wind generation environment
UEPMNT003	Coordinate maintenance on a wind farm └ UEPMNT009 Maintain large scale wind turbines └ UEPMNT010 Maintain wind turbine control systems └ UEPMNT012 Maintain wind turbine mechanical systems
UEPMNT004	Diagnose and repair faults in large scale wind turbines└ UEPMNT009 Maintain large scale wind turbines
UEPMNT005	Diagnose and repair faults in wind turbine control systems └ UEPMNT010 Maintain wind turbine control systems └ UEPOPS107 Operate and monitor supervisory control and data acquisition systems
UEPMNT006	Diagnose and repair faults in wind turbine electrical systems └ UEPMNT011 Maintain wind turbine electrical systems
UEPMNT008	Maintain and monitor wind farm civil assets

UEPMNT010	Maintain wind turbine control systems
UEPMNT011	Maintain wind turbine electrical systems
UEPMNT013	Monitor climatic conditions for renewable electricity generation
UEPMNT014	Test and commission wind turbines
UEPOPS025	Coordinate local H.V. networks
UEPOPS036	Develop H.V. switching programs
UEPOPS116	Operate local H.V. switchgear
UEPOPS124	Perform switching to a switching program
UEPOPS130	Respond to a critical incident
UETDREL005	Work safely in the vicinity of live electrical apparatus └ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRMP001	Apply access authority procedures to work on or near electrical apparatus
UETDRMP002	ESI safety rules for work on, near or in the vicinity of electrical apparatus
UETDRMP009	Perform tower rescue └ HLTAID009 Provide cardiopulmonary resuscitation

Qualification Mapping Information

This qualification replaces and is not equivalent to UEP40618 Certificate IV in Large Scale Wind Generation - Electrical

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEP50122 Diploma of ESI Generation

Modification History

Release 1. This is the first release of this qualification in the UEP Electricity Supply Industry - Generation Sector Training Package.

Qualification Description

The qualification covers skills and knowledge to manage power generation plant systems activities, remote operation of network systems, development of operational procedures and the implementation of safe working practice for work in the electrical supply industry (ESI).

It also includes working with civil plant and infrastructure and observing safe working practices.

Combined Specialist - Operations and Systems Operations

This specialisation covers the skills and knowledge required to perform operations and systems operations.

Specialist - Operations

This specialisation covers the skills and knowledge required to perform operations.

Specialist - Systems Operations

This specialisation covers the skills and knowledge required to perform systems operations.

Please note: RTO to insert on the testamur, the specialisation selected from the specialist elective unit group below.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of **36 units of competency** for the Combined Specialisation – Operations and Systems Operations

A total of **29 units of competency** for the Specialisation - Operations

A total of **27 units of competency** for the Specialisation - Systems Operations
comprising:

Combined Specialisation - Operations and Systems Operations

- 12 core units listed below; plus

- 9 specialisation units from Group A; plus
- 7 specialisation units from Group B; plus
- 5 elective units from Group C; plus
- 3 elective units may be selected from Group C or, with appropriate contextualisation, from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Operations

- 12 core units listed below; plus
- 9 specialisation units from Group A; plus
- 5 elective units from Group C; plus
- 3 elective units may be selected from Group C or, with appropriate contextualisation, from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Specialisation – Systems Operations

- 12 core units listed below; plus
- 7 specialisation units from Group B; plus
- 5 elective units from Group C; plus
- 3 elective units may be selected from Group C or, with appropriate contextualisation, from a qualification in this or any endorsed Training Package, provided selected units contribute to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite unit is attached to a unit, it is identified by this symbol ⊥.

Core units

UEECD0024	Implement and monitor energy sector WHS policies and procedures
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEPOPS001	Analyse single protection device operation
UEPOPS003	Apply quality systems to work
UEPOPS031	Coordinate response to critical incidents ⊥ UEPOPS130 Respond to a critical incident
UEPOPS032	Coordinate team activities
UEPOPS043	Interpret and analyse multi-operation protection devices

- └ UEPOPS001 Analyse single protection device operation
- UEPOPS047 Maintain quality systems within the team
 - └ UEPOPS003 Apply quality systems to work
- UEPOPS053 Manage operational crisis to maintain or restore power system integrity
- UEPOPS058 Manage Work Health and Safety policy and procedures
 - └ UEECD0024 Implement and monitor energy sector WHS policies and procedures
- UEPOPS061 Monitor and implement environmental site plans and procedures
- UEPOPS130 Respond to a critical incident

Group A: Specialist Electives - Operations

- UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
 - └ UEPOPS017 Conduct single energy source isolation procedures for permit to work
- UEPOPS017 Conduct single energy source isolation procedures for permit to work
- UEPOPS019 Control electrical energy production
- UEPOPS028 Coordinate permit to work system
 - └ UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
- UEPOPS055 Manage permit to work system
 - └ UEPOPS011 Conduct multiple energy source isolation procedures for permit to work
 - └ UEPOPS028 Coordinate permit to work system
- UEPOPS056 Manage quality control procedures
- UEPOPS075 Operate and monitor a.c. electrical systems
- UEPOPS089 Operate and monitor d.c. electrical systems
- UEPOPS127 Plan and organise work

Group B: Specialist Electives - System Operations

UEPOPS026	Coordinate network/system
UEPOPS030	Coordinate power generation
UEPOPS036	Develop H.V. switching programs
UEPOPS040	Facilitate the use of contingency plans for power generation facilities
UEPOPS052	Manage high voltage network system └ UEPOPS026 Coordinate network/system
UEPOPS108	Operate and monitor system equipment
UEPOPS124	Perform switching to a switching program

Group C: General electives

BSBHRM523	Coordinate the learning and development of teams and individuals
BSBINS501	Implement information and knowledge management systems
BSBLDR522	Manage people performance
BSBOPS502	Manage business operational plans
BSBOPS505	Manage organisational customer service
BSBPEF501	Manage personal and professional development
BSBSTR501	Establish innovative work environments
BSBSTR502	Facilitate continuous improvement
BSBTWK502	Manage team effectiveness
BSBWHS521	Ensure a safe workplace for a work area
UEECO0001	Estimate electrotechnology projects
UEPOPL003	Licence to operate a reciprocating steam engine
UEPOPL004	Licence to operate a steam turbine

UEPOPS002	Apply environmental and sustainable energy procedures
UEPOPS004	Carry out operational checks on in-service electrical plant
UEPOPS006	Collect and analyse hydrological and meteorological data └ UEPOPS122 Perform process plant inspections
UEPOPS012	Conduct non-routine operational testing
UEPOPS013	Conduct operational checks and carry out corrective action on in-service electrical plant
UEPOPS014	Conduct operational checks on in-service mechanical plant
UEPOPS015	Conduct project management
UEPOPS018	Conduct water conveyance and control
UEPOPS020	Control hydro generation pumping
UEPOPS021	Control permit to work operations
UEPOPS022	Coordinate and direct switching program └ UEPOPS124 Perform switching to a switching program
UEPOPS023	Coordinate electrical energy production └ UEPOPS019 Control electrical energy production
UEPOPS024	Coordinate first response team operation
UEPOPS025	Coordinate local H.V. networks
UEPOPS027	Coordinate operational strategies for power production
UEPOPS029	Coordinate photovoltaic solar power plant operations
UEPOPS033	Coordinate the use of contingency plans └ UEPOPS040 Facilitate the use of contingency plans for power generation facilities
UEPOPS034	Coordinate wind farm operations
UEPOPS035	Coordinate workplace communication

	└ UEPOPS041 Facilitate workplace communication
UEPOPS037	Ensure compliance with Work Health and Safety policy and procedures
UEPOPS038	Evaluate cost estimations and initiate appropriate solutions └ UEECO0001 Estimate electrotechnology projects
UEPOPS039	Evaluate scheduling of generation plant └ UEPOPS132 Schedule generation
UEPOPS041	Facilitate workplace communication
UEPOPS042	Implement dam safety surveillance procedures
UEPOPS048	Manage commissioning and decommissioning
UEPOPS049	Manage critical incidents └ UEPOPS031 Coordinate response to critical incidents └ UEPOPS130 Respond to a critical incident
UEPOPS050	Manage environmental management systems
UEPOPS051	Manage first response team └ UEPOPS024 Coordinate first response team operation
UEPOPS052	Manage high voltage network system └ UEPOPS026 Coordinate network/system
UEPOPS054	Manage operational strategies for power production
UEPOPS057	Manage system restart
UEPOPS059	Manage, operate and monitor a gas turbine unit
UEPOPS060	Monitor and coordinate the operation of a combined cycle gas turbine unit └ UEPOPS059 Manage, operate and monitor a gas turbine unit └ UEPOPS073 Operate and monitor a steam turbine └ UEPOPS095 Operate and monitor fuel firing plant - gas/oil └ UEPOPS101 Operate and monitor HRSG hot gas control system
UEPOPS062	Monitor and maintain civil assets

UEPOPS063	Monitor and maintain wind farm civil assets
UEPOPS064	Monitor climatic conditions for renewable energy production
UEPOPS065	Monitor implementation of quality control for production and maintenance └ UEPOPS047 Maintain quality systems within the team
UEPOPS066	Monitor power generation plant reliability
UEPOPS067	Monitor the implementation of under frequency load shedding
UEPOPS068	Operate a hydro generator synchronous condenser pump unit
UEPOPS070	Operate and monitor a boiler unit
UEPOPS071	Operate and monitor a heat recovery steam generator unit └ UEPOPS101 Operate and monitor HRSG hot gas control system └ UEPOPS138 Start and run up gas turbine └ UEPOPS141 Start up a heat recovery steam generator unit
UEPOPS072	Operate and monitor a hydro turbine
UEPOPS073	Operate and monitor a steam turbine
UEPOPS076	Operate and monitor air conditioning plant and ventilation systems
UEPOPS077	Operate and monitor alkalinity reduction plant
UEPOPS081	Operate and monitor auxiliary steam systems
UEPOPS082	Operate and monitor boiler draught system
UEPOPS083	Operate and monitor boiler steam/water cycle
UEPOPS084	Operate and monitor brine concentrator plant
UEPOPS086	Operate and monitor compressed air systems
UEPOPS087	Operate and monitor compressed gas systems
UEPOPS088	Operate and monitor condenser and auxiliary cooling systems

UEPOPS090	Operate and monitor dual fuel firing plant
UEPOPS092	Operate and monitor fixed fire protection systems
UEPOPS093	Operate and monitor flue gas (NOx) mitigation systems
UEPOPS094	Operate and monitor fuel firing plant -coal
UEPOPS095	Operate and monitor fuel firing plant -gas/oil
UEPOPS096	Operate and monitor fuel supply
UEPOPS098	Operate and monitor gas production plant
UEPOPS099	Operate and monitor generator/alternator
UEPOPS100	Operate and monitor heat exchangers and cooling systems
UEPOPS101	Operate and monitor HRSG hot gas control system
UEPOPS102	Operate and monitor hydro plant auxiliary systems
UEPOPS103	Operate and monitor hydro unit control and protection systems
UEPOPS104	Operate and monitor oil systems
UEPOPS105	Operate and monitor reverse osmosis plant
UEPOPS107	Operate and monitor supervisory, control and data acquisition systems
UEPOPS109	Operate and monitor water quality monitoring systems
UEPOPS110	Operate and monitor water systems condensate and feedwater
UEPOPS111	Operate and monitor water treatment plant
UEPOPS112	Operate bulk coal handling plant
UEPOPS113	Operate fabric filter dust collection plant
UEPOPS114	Operate H.V. condition changing apparatus
UEPOPS115	Operate hydroelectric generating plant and auxiliary equipment

UEPOPS116	Operate local H.V. switchgear
UEPOPS117	Operate local L.V. switchgear
UEPOPS118	Operate manual systems └ UEPOPS145 Undertake local systems operations
UEPOPS120	Undertake operational commissioning and decommissioning
UEPOPS122	Perform process plant inspections
UEPOPS123	Perform risk analysis of generation plant
UEPOPS126	Plan a scheduled outage
UEPOPS128	Produce maintenance plans for generation production plant
UEPOPS129	Produce maintenance strategies for generation production plant └ UEPOPS128 Produce maintenance plans for generation production plant
UEPOPS131	Run up a steam turbine
UEPOPS132	Schedule generation
UEPOPS133	Shut down a boiler unit
UEPOPS134	Shut down a gas turbine
UEPOPS135	Shut down a heat recovery steam generator unit └ UEPOPS101 Operate and monitor HRSG hot gas control system └ UEPOPS134 Shut down a gas turbine
UEPOPS136	Shut down a hydro turbine
UEPOPS137	Shut down a steam turbine
UEPOPS138	Start and run up gas turbine
UEPOPS139	Start and run-up a hydro turbine
UEPOPS140	Start up a boiler unit
UEPOPS141	Start up a heat recovery steam generator unit

└ UEPOPS101 Operate and monitor HRSG hot gas control system

UEPOPS143 Tune process plant and equipment

UEPOPS144 Undertake dam safety surveillance

UEPOPS145 Undertake local systems operations

Qualification Mapping Information

This qualification replaces and is equivalent to UEP50218 Diploma of ESI Generation Operations and UEP50118 Diploma of ESI Generation - Systems Operations

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPSS00013 Co-ordinate Real-Time Offshore Operations Skill Set

Modification History

Release 1. This is the first release of this Skill Set in the Electricity Supply Industry - Generation Sector Training Package.

Description

This Skill Set UEPSS00013 Co-ordinate Real-Time Offshore Operations provides the skills and knowledge required to perform the duties of a control room operator managing an offshore electricity generation facility within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

It includes the operation of systems and coordination of an offshore electricity generation facility.

It is essential that anyone undertaking this Skill Set must already hold a Certificate II in ESI Generation - Operations Support or equivalent

Pathways Information

UEPSS00013 Co-ordinate Real-Time Offshore Operations is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

The units of competency in this Skill Set can contribute to the completion of relevant Certificate III, Certificate IV and Diploma qualifications from the UEP Electricity Supply Industry - Generation Sector Training Package

Licensing/Regulatory Information

The skills and knowledge described in this Skill Set do not require a licence to practice in the workplace

Skill Set Requirements

A total of 5 **units of competency** must be attained.

BSBPEF301	Organise personal work priorities
UEPOPS041	Facilitate workplace communication
UEPOPS047	Maintain quality systems within the team

UEPOPS107	Operate and monitor supervisory control and data acquisition systems
UEPOPS150	Operate and monitor multiple facilities from single control room

Target Group

This is Skill Set UEPSS00013 Co-ordinate Real-Time Offshore Operations is suitable for operators working in the UEP Electricity Supply Industry - Generation Sector

Suggested words for Statement of Attainment

This Skill Set UEPSS00013 Co-ordinate Real-Time Offshore Operations from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum requirements for control room operators managing an offshore electricity generation facility

Custom Content Section

Not applicable.

UEPSS00014 Managing Network Communications Skill Set

Modification History

Release 1. This is the first release of this Skill Set in the Electricity Supply Industry - Generation Sector Training Package.

Description

This Skill Set UEPSS00014 Managing Network Communications provides the skills and knowledge required to perform the duties of a control room operator managing operations within and electricity generation network within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

It includes the operation of systems and coordination of grid operations in an electricity generation environment.

It is essential that anyone undertaking this Skill Set must already hold a Certificate II in ESI Generation - Operations Support or equivalent.

Pathways Information

UEPSS00014 Managing Network Communications is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

The units of competency in this Skill Set can contribute to the completion of relevant Certificate III, Certificate IV and Diploma qualifications from the UEP Electricity Supply Industry - Generation Sector Training Package

Licensing/Regulatory Information

The skills and knowledge described in this Skill Set do not require a licence to practice in the workplace

Skill Set Requirements

A total of 5 **units of competency** must be attained.

BSBPEF301	Organise personal work priorities
UEPOPS041	Facilitate workplace communication
UEPOPS047	Maintain quality systems within a team
UEPOPS107	Operate and monitor supervisory control data and acquisition systems

UEPOPS148 Operate and monitor a local grid operations control room

Target Group

This is Skill Set UEPSS00014 Managing Network Communications is suitable for operators working in the UEP Electricity Supply Industry - Generation Sector Training Package environment

Suggested words for Statement of Attainment

This Skill Set UEPSS00014 Managing Network Communications from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum requirements for control room operators managing operations within electricity generation network.

Custom Content Section

Not applicable.

UEPSS00015 Managing Site Outages Skill Set

Modification History

Release 1. This is the first release of this Skill Set in the Electricity Supply Industry - Generation Sector Training Package.

Description

This Skill Set UEPSS00015 Managing Site Outages provides the skills and knowledge required to perform the duties of a control room operator managing site outages within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

It includes the operation of systems and coordination of site outages in and electricity generation environment.

It is essential that anyone undertaking this Skill Set must already hold a Certificate II in ESI Generation - Operations Support or equivalent.

Pathways Information

UEPSS00015 Managing Site Outages is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

The units of competency in this Skill Set can contribute to the completion of relevant Certificate III, Certificate IV and Diploma qualifications from the UEP Electricity Supply Industry - Generation Sector Training Package.

Licensing/Regulatory Information

The skills and knowledge described in this Skill Set do not require a licence to practice in the workplace.

Skill Set Requirements

A total of **6 units of competency** must be attained.

BSBPEF301	Organise personal work priorities
UEPOPS041	Facilitate workplace communication
UEPOPS047	Maintain quality systems within the team
UEPOPS107	Operate and monitor supervisory control and data acquisition systems

UEPOPS146 Operate and monitor hydro plant/systems

UEPOPS152 Operate Renewable Energy Generation and Storage Systems

Target Group

This is Skill Set UEPSS00015 Managing Site Outages is suitable for operators working in the UEP Electricity Supply Industry - Generation Sector.

Suggested words for Statement of Attainment

This Skill Set UEPSS00015 Managing Site Outages from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum requirements for control room operators managing site outages.

Custom Content Section

Not applicable.

UEPMNT001 Carry out routine work activities in an electricity supply industry generation environment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake scheduled routine work activities in the electricity supply industry (ESI) generation sector.

Routine work includes undertaking functions encompassing activities such as the operation of non-critical generation plant systems, lubricating plant and performing minor maintenance on both electrical and mechanical equipment. Tasks may also involve cleaning, warehousing, stock duties and the operation of load shifting equipment.

Competency in this unit requires the ability carry out routine work activities in an electrical supply generation environment. Individuals will work, under supervision, as an operator in a power generation facility.

No licensing, legislative or certification requirements apply to unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to undertake routine work activities	1.1 Work requirements are identified from relevant personnel and documentation, in accordance with permit and workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Tools, equipment and personnel protective equipment (PPE) are identified and checked to ensure they are safe to use in accordance with workplace procedures 1.4 Relevant personnel are consulted to ensure work is coordinated at site with others in accordance with workplace procedures 1.5 Resources and materials are confirmed and obtained in accordance with workplace procedures 1.6 Schedule of work, including practices for working safely such as the use of safety data sheets (SDS), manual handling techniques and PPE, are confirmed in accordance with workplace procedures
2 Carry out work activities	2.1 Hazards are identified and risk controls are implemented in accordance with workplace procedures 2.2 Schedule of work is followed to ensure work activities are completed in accordance with workplace procedures 2.3 Work practices applicable to ESI are applied in accordance with workplace procedures 2.4 Instructions are sought, if required, from relevant personnel when unplanned events occur in accordance with workplace procedures 2.5 Continuous checks on work quality are undertaken in accordance with workplace procedures
3 Check completed work activities	3.1 Final checks are made to ensure work conforms with instructions and requirements in accordance with workplace procedures 3.2 Relevant personnel are notified of work completion in accordance with workplace procedures

- 3.3 Tools, equipment, resources and materials are cleaned, checked and returned to storage in accordance with workplace procedures
- 3.4 Work area is cleaned and made safe using sustainable energy practices in accordance with workplace procedures
- 3.5 Records are updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT201 Carry out routine work activities in an electricity supply industry generation environment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT001 Carry out routine work activities in an electricity supply industry generation environment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying sustainable energy practices
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
- checking work results
- communicating with personnel
- completing lubrication, servicing and maintenance activities
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- dealing with unplanned events
- interpreting manufactures' specifications and manuals
- preparing to undertake routine work activities
- using permit to work system, safety data sheets (SDS) and manual handling techniques
- using tools, resources, materials and permits.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- cleaning methods and tools
- cleaning solvents
- electrical supply industry routine tasks

- lubrication, service and maintenance requirements
- manual handling techniques
- manuals
- SDS
- permit to work system
- potential hazards
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- sustainable energy practices
- types of power generation plant
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - PPE
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT002 Carry out routine work activities in an ESI large scale wind generation environment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake scheduled routine work activities in the electricity supply industry (ESI) - large scale wind generation environment.

Routine work activities include undertaking tasks such as the operation of non-critical plant systems, lubricating plant, performing minor maintenance on electrical and mechanical equipment, cleaning plant, performing warehousing stock duties and operating mobile load shifting equipment.

Competency in this unit requires the ability to carry out routine work activities in an electrical supply generation environment - wind. Individuals will work, under supervision, as a maintenance operative in a power generation facility.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to undertake routine work activities

- 1.1** Instructions for work activities are identified and confirmed in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) policies and procedures are identified and confirmed for use in accordance with workplace procedures
- 1.3** Tools, equipment and personnel protective equipment (PPE) are identified and checked to ensure they are safe to use in accordance with workplace procedures
- 1.4** Resources and materials are identified and obtained in accordance with workplace procedures
- 1.5** Schedule of work, including practices for working safely such as use of safety data sheets (SDS) and manual handling techniques, are confirmed in accordance with workplace procedures

2 Carry out work activities

- 2.1** Hazards are identified and risk controls are implemented in accordance with workplace procedures
- 2.2** Schedule of work is followed in accordance with workplace procedures to ensure work activities are completed to an agreed timeframe, quality standard and with a minimum of waste
- 2.3** Workplace procedures and practices applicable to electricity supply by wind generation are applied
- 2.4** Instructions are sought, if required, from appropriate personnel in accordance with workplace procedures in the event of unplanned events
- 2.5** Regular checks of work quality are undertaken in accordance with workplace procedures

3 Check completed work activities

- 3.1** Appropriate personnel are notified of task completion in accordance with workplace procedures
- 3.2** Tools, equipment, surplus resources and materials are cleaned, checked and returned to storage in accordance with workplace procedures
- 3.3** Work area is cleaned up and made safe in accordance with workplace procedures using sustainable energy practices
- 3.4** Records are updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT202 Carry out routine work activities in an ESI large scale wind generation environment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT002 Carry out routine work activities in an ESI large scale wind generation environment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- carrying out routine work activities, including servicing and maintenance tasks
- checking results
- communicating with personnel
- completing work
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- performing routine activities using safety data sheets (SDS)
- preparing to undertake routine work activities
- using tools, resources, materials and personal protective equipment (PPE)
- working with maintenance schedules.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- maintenance schedules
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- routine work activities, including servicing and maintenance tasks
- SDS
- tools, resources, materials and PPE
- WHS/OHS legislated requirements, including:

- emergency procedures
- identifying hazards
- risk control measures
- safe working practices
- wind generation, types and characteristics
- workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT003 Coordinate maintenance on a wind farm

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate scheduled servicing and maintenance of wind turbines on a wind farm.

Scheduled maintenance is the process of optimising plant and equipment operations through regular inspections and verification of wind turbines for operational efficiency.

Competency in this unit requires the ability to plan for scheduled maintenance, coordinate scheduled maintenance, respond to wind turbine breakdown, produce production and maintenance reports and make recommendations for dealing with wind turbine breakdowns. Individuals will, in general, work as a coordinator in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit

Pre-requisite Unit

UEPMNT009 Maintain large scale wind turbines

UEPMNT010 Maintain wind turbine control systems

UEPMNT012 Maintain wind turbine mechanical systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for scheduled maintenance

1.1 Maintenance schedules provided by key stakeholders and organisational representatives are accessed and interpreted

1.2 Local maintenance work schedules are developed in accordance with workplace procedures

1.3 Stock and spare parts are identified in accordance with workplace procedures

2 Coordinate scheduled maintenance

2.1 Roles and tasks are allocated to onsite personnel in accordance with workplace procedures

2.2 Scheduled maintenance is performed in accordance with workplace procedures and within established timeframes

2.3 A financial budget for scheduled maintenance is identified and coordinated

2.4 Maintenance tasks are completed in accordance with the maintenance schedule and industry standards

2.5 Allocation of work tasks is coordinated in accordance with workplace procedures

2.6 Risk control measures are identified, prioritised and evaluated against maintenance schedule

2.7 Work permits are secured for performance of maintenance tasks in accordance with workplace procedures

3 Respond to wind turbine breakdown

3.1 An action plan for wind turbine breakdowns is developed and implemented in accordance with workplace procedures

3.2 Key stakeholders, personnel and organisations are advised of outage in accordance with workplace procedures

3.3 Out-of-hours breakdown roster is updated and applied in accordance with workplace procedures

	3.4	Analysis of wind turbine breakdown to determine likely remediation actions is undertaken in accordance with workplace procedures
	3.5	Resources to find cause of wind turbine fault or breakdown are allocated
	3.6	Escalation procedures are applied, if required, for wind turbine fault
	3.7	Remediation for defective components or plant is selected in accordance with workplace procedures
	3.8	Technical advice is given regarding potential hazards, safety risks and risk control measures or appropriate authorities are consulted
	3.9	Solutions to non-routine problems are identified and actioned in accordance with workplace procedures
4 Produce production and maintenance reports	4.1	Wind turbine records to produce maintenance reports are accessed
	4.2	Reports are produced in accordance with workplace procedures and standards using applicable software and formats
	4.3	Reports are distributed to stakeholders and appropriate personnel in accordance with workplace procedures
5 Make recommendations for dealing with wind turbine breakdowns	5.1	Recommendations for dealing with wind turbine breakdowns are made to appropriate personnel
	5.2	Debriefing discussion is held with team members to facilitate managing similar wind turbine breakdowns

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation

Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT446 Coordinate maintenance on a wind farm.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT003 Coordinate maintenance on a wind farm

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- coordinating scheduled maintenance
- determining permit to work requirements
- developing maintenance schedule plan
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- making recommendations for dealing with wind turbine breakdowns
- planning for scheduled maintenance work
- producing maintenance reports
- providing direction to team members involved in maintenance activities
- responding to wind turbine breakdown
- utilising risk control register.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication in a team environment
- coordination responsibilities
- development of team members through task allocation
- equipment spares and consumables suitable for maintenance

- escalations for identified faults
- organising maintenance schedules and plans
- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- report writing, including standards and styles
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT004 Diagnose and repair faults in large scale wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in large scale wind turbine systems.

Diagnosing and repairing faults is the process of inspecting wind turbine systems to identify problems and ensure repairs take place. The aim is to enhance the overall delivery of large scale wind turbine systems.

Competency in this unit requires the ability to gather data, interpret data to establish a theory about fault, repair faults and record faults. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEPMNT009 Maintain large scale wind turbines

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Gather data

2 Interpret data to establish hypothesis about fault

3 Repair fault

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Wind turbine system's data logging information and error codes are accessed in accordance with workplace procedures
- 1.2 Wind turbine system's sensory data on fault is gathered
- 1.3 Hard copy or online documentation is accessed to support fault-finding process in accordance with workplace procedures
- 1.4 Fault indicators and error codes are examined and interpreted in accordance with workplace procedures
- 1.5 Circuit diagrams, manufacturers' recommendations and specifications, schematics and/or consultation with technical advisors are used to determine circuit and system characteristics and function
- 2.1 Wind turbine system performance parameters are identified and applied to interpretation of fault data
- 2.2 Wind turbine system faults are verified, or localised, using approved techniques, procedures, tools and test equipment
- 2.3 Priorities are set for testing or replacement of specific components, wiring and connections in wind turbine systems
- 3.1 Risk analysis is undertaken in accordance with workplace procedures and is communicated to the work team
- 3.2 Safety precautions including circuit isolations, physical barriers and other protective devices or systems are used, where appropriate
- 3.3 Tests are conducted to ensure fault has been correctly repaired or isolated in accordance with workplace procedures
- 3.4 Wind turbine system faulty components that have been removed from service are examined and cause of

problem is identified

- 3.5 Loose connections or wiring in the wind turbine system are repaired in accordance with workplace procedures
- 3.6 Parts or components are removed and replaced with tested and operational parts
- 3.7 Wind turbine system is tested in accordance with workplace procedures to ensure correct operation
- 3.8 Fault-finding process is escalated to repairing a complex fault using a technical adviser, if required

4 Record fault

- 4.1 Wind turbine system's faulty components and parts are correctly tagged, identified and stored in accordance with workplace procedures
- 4.2 Wind turbine system's faults are recorded in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT445 Diagnose and repair faults in large scale wind turbine generators.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT004 Diagnose and repair faults in large scale wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- determining permit to work requirements
- diagnosing wind turbine system faults
- gathering wind turbine system data
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting data logs and component error code to determine fault
- interpreting wind turbine system data to establish theory about faults
- reassembling wind turbine system
- recording faults
- repairing wind turbine system faults
- replacing faulty components
- replacing wind turbine system components
- testing wind turbine systems, including pitch system, yaw system, gearbox, generator, control systems, braking and start-up systems and weather monitoring systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- data logs and system
- diagnosis techniques for wind turbine system faults

- error codes
- permit to work system
- reassembly techniques for wind turbine system components
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- replacement techniques for wind turbine system components
- tests for wind turbine systems and components
- types and characteristics of wind turbine systems
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - hazard identification
 - safe working practices
- wind turbine design and control system
- wind turbine system testing and function
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT005 Diagnose and repair faults in wind turbine control systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in large scale wind turbine control systems.

Diagnosing and repairing faults is the process of optimising the outcomes of large scale wind turbine control systems through regular inspections and verification of operational efficiency.

Competency in this unit requires the ability to gather data, interpret data to establish hypothesis about wind turbine control system fault, repair wind turbine control system fault and record wind turbine control system fault. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

Licensing/Certification Information

The application of the skills and knowledge described within this unit may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit. For this unit persons must have one of the following as an entry requirement:

- Unrestricted Electrical Licence issued in an Australian State or Territory, or
- Electrical Fitter Occupational Licence issued in an Australian State or Territory, or
- UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or
- UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Pre-requisite Unit

UEPOPS347 Operate and monitor supervisory control and data acquisition systems

UEPMNT010 Maintain wind turbine control systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Gather data

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Data logging information and error codes are accessed in accordance with workplace procedures
- 1.2 Sensory data on fault is gathered in accordance with workplace procedures
- 1.3 Documentation is accessed in accordance with workplace procedures to support fault finding process
- 1.4 Built-in fault indicators and error codes are, where appropriate, examined and interpreted
- 1.5 Reference to circuit diagrams, manufacturers' recommendations and specifications, schematics or consultation with technical advisor is used to determine control system circuit function and characteristics

2 Interpret data to establish hypothesis about wind turbine control system fault

- 2.1 Knowledge of wind turbine control systems and performance parameters is applied to interpretation of fault data
- 2.2 Wind turbine control systems faults are verified or localised using appropriate techniques, tools and test equipment in accordance with workplace procedures
- 2.3 Priorities are set for testing or replacement of specific components, wiring and connections in the wind turbine control system

3 Repair wind turbine control system fault

- 3.1 Risk analysis is undertaken and is communicated to work team and appropriate personnel in accordance with

- workplace procedures
- 3.2 Safety precautions, including circuit isolations, physical barriers and other protective devices or systems are, where appropriate, used in accordance with workplace procedures
 - 3.3 Tests are conducted to ensure wind turbine control system fault has been isolated
 - 3.4 Loose connections or wiring are repaired in accordance with workplace procedures
 - 3.5 Faulty parts of wind turbine control system are removed and replaced with tested and operational parts
 - 3.6 Wind turbine control systems are tested in accordance with workplace procedures, to ensure correct operation
 - 3.7 Repairs to complex faults are escalated in accordance with workplace procedures to a technical adviser
- 4 Record wind turbine control system fault**
- 4.1 Wind turbine control system's faulty components and parts are tagged, identified and stored in accordance with workplace procedures
 - 4.2 Faults are recorded in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT448 Diagnose and repair faults in wind turbine generator control systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT005 Diagnose and repair faults in wind turbine control systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- determining permit to work requirements
- gathering data
- interpreting data to establish theory about wind turbine control system faults
- interpreting fault code and similar data produced by control system monitoring
- recording wind turbine control system faults
- removing and repairing wind turbine control system faults
- tagging and storing faulty wind turbine control system parts
- testing wind turbine control system
- undertaking risk analysis
- utilising safety precautions
- verifying faults.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and range of conditions and include knowledge of:

- data collection
- fault codes and indicators from wind turbine control components

- fault diagnosis and verification
- installation and/or repair
- isolations
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk analysis
- safety precautions
- sensor data analysis
- tag and storage of faulty wind turbine control system parts
- techniques for replacing damaged wiring
- tests for wind turbine control system
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- wind turbine control systems, types and characteristics
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT006 Diagnose and repair faults in wind turbine electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in large scale wind turbine electrical systems.

Diagnosis and repair of faults is the process of optimising large scale wind turbine electrical system performance through regular inspection and verification of operational efficiency.

Competency in this unit requires the ability to gather data, interpret data to establish hypothesis about wind turbine electrical system fault, repair wind turbine electrical system fault and record wind turbine electrical system fault. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

Licensing/Certification Information

The application of the skills and knowledge described within this unit may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit. For this unit persons must have one of the following as an entry requirement:

- Unrestricted Electrical Licence issued in an Australian State or Territory, or
- Electrical Fitter Occupational Licence issued in an Australian State or Territory, or
- UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Pre-requisite Unit

UEPMNT011 Maintain wind turbine electrical system

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Gather data

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Data logging information and error codes are accessed in accordance with workplace procedures
- 1.2 Sensory data on fault is gathered in accordance with workplace procedures
- 1.3 Documentation is accessed in accordance with workplace procedures to support fault-finding process
- 1.4 Built-in fault indicators and error codes are, where appropriate, examined and interpreted
- 1.5 Reference to circuit diagrams, manufacturers' recommendations and specifications, schematics or consultation with technical adviser is used to determine electrical circuit or system functions and characteristics

2 Interpret data to establish hypothesis about wind turbine electrical system fault

- 2.1 Knowledge of wind turbine electrical systems and performance parameters is applied to interpretation of fault data
- 2.2 Wind turbine electrical system faults are verified or localised using appropriate techniques, tools and test equipment in accordance with workplace procedures.
- 2.3 Priorities are set for testing or replacement of specific components, wiring and connections in the wind turbine electrical system

3 Repair wind turbine electrical system fault

- 3.1 Risk analysis is undertaken and is communicated to work team and appropriate personnel in accordance with workplace procedures
- 3.2 Safety precautions including circuit isolations, physical barriers and other protective devices or systems are, where appropriate, used in accordance with workplace

procedures

3.3 Tests are conducted to ensure wind turbine electrical system fault has been isolated

3.4 Loose connections or wiring are repaired in accordance with workplace procedures

3.5 Faulty parts of wind turbine electrical system are removed and replaced with tested and operational parts

3.6 Wind turbine electrical system is tested in accordance with workplace procedures to ensure correct operation

3.7 Repairs to complex faults are, if required, escalated in accordance with workplace procedures to a technical adviser

4 Record wind turbine electrical system fault

4.1 Wind turbine electrical system faulty components and parts are tagged, identified and stored in accordance with workplace procedures

4.2 Faults are recorded in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT447 Diagnose and repair faults in wind turbine generator electrical systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT006 Diagnose and repair faults in wind turbine electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/Occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- determining permit to work requirements
- gathering data, including faulty indicators, error codes and sensory data
- interpreting data to establish theory about wind turbine electrical system faults
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- recording wind turbine electrical system faults
- removing and repairing wind turbine electrical system faults
- tagging and storing faulty wind turbine electrical system components
- testing wind turbine electrical system
- undertaking risk analysis
- utilising safety precautions
- verifying faults.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and range of conditions and include knowledge of:

- fault diagnosis and verification
- installation and/or repair of wind turbine electrical system
- isolations

- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk analysis
- safety precautions
- tag and storage of faulty wind turbine electrical system components
- techniques for replacing damaged wiring
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - hazard identification
 - safe working practices
- wind turbine electrical system testing
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT007 Diagnose and repair mechanical systems faults in wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to diagnose and repair mechanical system faults in large scale wind turbines.

Diagnosing and repairing faults is the process of inspecting large scale wind turbines to identify problems and ensure repairs take place. The aim is to ensure that the overall delivery of the large scale wind turbines meets operational requirements.

Competency in this unit requires the ability to gather data, interpret data to establish theory about wind turbine mechanical system faults, repair wind turbine mechanical system faults and record wind turbine mechanical system faults. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEPMNT012 Maintain wind turbine mechanical systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Gather data

2 Interpret data to establish hypothesis about wind turbine mechanical system fault

3 Repair wind turbine mechanical system fault

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Data logging information and error codes are accessed in accordance with workplace procedures

1.2 Sensory data on fault is gathered in accordance with workplace procedures

1.3 Documentation to support fault-finding processes are accessed in accordance with workplace procedures

1.4 Built-in fault indicators and error codes, where appropriate, are examined and interpreted

1.5 Circuit or system function and characteristics are determined by reference to circuit diagrams, specifications, schematics or in consultation with technical advisor

2.1 Wind turbine mechanical system and performance parameter knowledge is applied to interpretation of fault data

2.2 Wind turbine mechanical system faults are verified or localised using appropriate techniques, tools and test equipment in accordance with workplace procedures

2.3 Priorities are set for testing or replacement of specific components, wiring and connections in the wind turbine mechanical system

3.1 Risk analysis is undertaken and is communicated to work team and appropriate personnel in accordance with workplace procedures

3.2 Safety precautions, including circuit isolations, physical barriers and other protective devices or systems are used, where appropriate, in accordance with workplace procedures

3.3 Tests are conducted to ensure wind turbine mechanical system fault has been isolated

	3.4	Wind turbine mechanical system parts likely to be cause of fault are removed and replaced with tested and operational parts
	3.5	Wind turbine mechanical systems are tested in accordance with workplace procedures to ensure correct operation
	3.6	Repairs to complex faults are escalated in accordance with workplace procedures, if required, to a technical adviser
4 Record wind turbine mechanical system fault	4.1	Wind turbine mechanical system faulty components and parts are tagged, identified and stored in accordance with workplace procedures
	4.2	Faults are recorded in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UEPMNT449 Diagnose and repair mechanical systems faults in wind turbine generators.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT007 Diagnose and repair mechanical systems faults in wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- determining permit to work requirements
- diagnosing and repairing faulty wind turbine mechanical system
- gathering data
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting wind turbine mechanical system
- interpreting data to establish theory about wind turbine mechanical system faults
- performing wind turbine mechanical system testing
- recording wind turbine mechanical system faults
- repairing wind turbine mechanical system faults
- replacing faulty wind turbine mechanical system components and parts.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- diagnosis and repair for wind turbine mechanical system faults
- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- replacement of faulty components and parts

- report requirements
- test and inspection techniques
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT008 Maintain and monitor wind farm civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to condition, monitor and conduct preventative and remedial maintenance to ensure the integrity of civil assets associated with a wind farm.

Civil assets include infrastructure such as water treatment facilities, sewer pipelines, roads, utility grids, bridges, tunnels and railways. Maintenance involves the use of strategies and procedures to preserve and extend the service life of civil asset infrastructure at a wind farm.

Competency in this unit requires the ability to plan work, disassemble wind turbine, inspect wind turbine components, repair wind turbine and/or components and report on all completed work tasks. Individuals will, in general, work under supervision in a maintenance operative in a power generation facility.

Power generation maintenance personnel are trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for the work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
- 1.2** Requirements, including scope of work and assigned roles, are identified and confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
- 1.3** Resources are obtained and inspected for compliance in accordance with workplace procedures
- 1.4** Potential hazards are identified and risk control measures are selected and implemented in accordance with workplace procedures
- 1.5** Work is planned sequenced and prioritised in accordance with workplace procedures

2 Monitor civil assets

- 2.1** Inspection of civil assets is completed in accordance with workplace procedures
- 2.2** Inspection results are reported in accordance with workplace procedures
- 2.3** Defects are reported in accordance with workplace procedures

3 Maintain civil assets

- 3.1** Maintenance work on civil assets is undertaken in accordance with workplace procedures and site requirements
- 3.2** Tools and equipment to maintain civil assets are utilised in accordance with manufacturers' recommendations and specifications, and job requirements.
- 3.3** Defects are repaired in accordance with workplace procedures

4 Complete work

- 4.1** Work is completed and appropriate personnel are notified in accordance with workplace procedures
- 4.2** Work area is cleared of waste, cleaned, restored and

secured in accordance with workplace procedures

- 4.3 Tools and equipment are maintained in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 4.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT370 Maintain and monitor wind farm civil assets.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT008 Maintain and monitor wind farm civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- confirming security systems operation
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- maintaining and repairing civil assets, including:
 - performing corrosion restoration and painting of metal surfaces
 - placing pest control baits in a safe and environmentally aware manner
 - undertaking surveys of lighting systems and replacing defective bulbs
 - using brush cutters and mowers to reduce vegetation from the perimeter of buildings and/or structures
- monitoring civil assets
- planning for maintenance and monitoring of wind farm civil assets work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- civil asset monitoring, including paint work, corrosion, pests, vegetation and erosion
- civil assets, including fences, gates, roads, pathways, security system and lights
- inspection methods and techniques

- maintenance methods and techniques
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- repair methods and techniques
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT009 Maintain large scale wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake scheduled maintenance of large scale wind turbines.

Scheduled maintenance typically includes a list of predetermined maintenance actions carried out at regular time intervals to prevent breakdowns. It includes monitoring, inspecting and maintaining large scale wind turbines to ensure their safe and efficient operation.

Competency in this unit requires the ability to plan work, conduct maintenance and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Requirements, including scope of work and assigned roles, are identified and confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
	1.3 Resources are obtained and inspected for compliance with job specification
	1.4 Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
	1.5 Work is planned, sequenced and prioritised in accordance with workplace procedures
	1.6 Isolations for work are requested in accordance with workplace procedures
	1.7 Work area is prepared in accordance with workplace procedures
2 Conduct maintenance	2.1 Wind turbine components is replaced in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Documented service checklists, or similar documentation, are followed in accordance with workplace procedures
	2.3 Diagnostic testing and data from monitoring systems are used to identify wind turbine components requiring maintenance
	2.4 Wind turbine components are dismantled for maintenance in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.5 Approved workplace techniques are used to enable identification or reassembly of components or equipment in accordance with workplace procedures

- 2.6 New components are obtained and inspected in accordance with workplace procedures for compliance with manufacturers' recommendations and specifications
 - 2.7 Wind turbine components are tested, monitored and adjusted in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3 **Complete work**
 - 3.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
 - 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
 - 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
 - 3.4 Maintenance completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT371 Maintain large scale wind turbine generators.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT009 Maintain large scale wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying local environmental waste management standards and requirements
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- assembling and dismantling wind turbine components
- communicating with personnel
- completing documentation after maintenance activities
- completing work in accordance with scheduled requirements
- conducting diagnostic testing using which may include use of a diagnostic computer
- conducting maintenance
- determining permit to work requirements
- identifying faults in wind turbine components
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting data
- planning for maintenance of large scale wind turbine work
- reading maintenance schedules and service checklists.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- safe working practices
- typical arrangements of power production plant
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
- wind turbine plant and components, its location and operating parameters
- wind turbine plant status
- wind turbine types and characteristics
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT010 Maintain wind turbine control systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake scheduled maintenance of control systems in large scale wind turbines.

Maintenance is the process of optimising control system operations in large scale wind turbines through regular inspections and verification of operational efficiency.

Competency in this unit requires the ability to plan work, conduct maintenance on wind turbine control systems and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1 Plan and prepare for work**
 - 1.1** Requirements, including scope of work and assigned roles, are identified and confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
 - 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
 - 1.3** Resources are obtained and inspected for compliance with job specification
 - 1.4** Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
 - 1.5** Work is planned, sequenced and prioritised in accordance with workplace procedures
 - 1.6** Isolations are requested, if required, in accordance with workplace procedures
 - 1.7** Work area is prepared in accordance with workplace procedures
- 2 Conduct maintenance on wind turbine control system components**
 - 2.1** Faulty control system components are replaced in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.2** Documented service checklists, or similar, are followed in accordance with workplace procedures
 - 2.3** Diagnostic testing and data from monitoring systems are used to identify those components requiring maintenance
 - 2.4** Control system components are dismantled for maintenance, if required, in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.5** Approved maintenance techniques are used to enable identification or reassembly of components in accordance with workplace procedures
 - 2.6** New components are obtained and inspected for compliance with manufacturers' recommendations and specifications in accordance with workplace procedures

- 2.7 Control system components are tested, monitored and adjusted, as required, in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3 Complete work**
 - 3.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
 - 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
 - 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
 - 3.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT443 Maintain wind turbine generator control systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT010 Maintain wind turbine control systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work in accordance with scheduled requirements
- conducting planned maintenance on wind turbine control systems
- determining permit to work requirements
- diagnosing wind turbine control system faults, including interpreting fault codes and data
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- planning for maintenance of wind turbine control systems work
- reassembling wind turbine control system components
- replacing wind turbine control system components
- testing wind turbine control system and components
- undertaking maintenance on wind turbine control systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- diagnosis techniques for wind turbine control system faults, including codes
- maintenance requirements for wind turbine control systems
- permit to work system
- reassembly techniques for wind turbine control system components
- regulations, industry standards, legislative requirements, codes of practice, manufacturers'

- recommendations and specifications, and environmental requirements
- replacement techniques for wind turbine control system components
- tests for wind turbine control system and components
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- wind turbine generation control system types and characteristics
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT011 Maintain wind turbine electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake scheduled maintenance of electrical systems in large scale wind turbines.

Maintenance is the process of optimising power generation plant and equipment operations through regular inspections and verification of electrical systems in large scale wind turbines.

Competency in this unit requires the ability to plan work, conduct maintenance on wind turbine electrical systems and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

Licensing/Certification Information

The application of the skills and knowledge described within this unit may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit. For this unit persons must have one of the following as an entry requirement:

- Unrestricted Electrical Licence issued in an Australian State or Territory, or
- Electrical Fitter Occupational Licence issued in an Australian State or Territory, or
- UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Requirements, including scope of work and assigned roles, are identified and are confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
	1.3 Resources are obtained and inspected for compliance with job specification
	1.4 Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
	1.5 Work is planned, sequenced and prioritised in accordance with workplace procedures
	1.6 Work area is prepared in accordance with workplace procedures
2 Conduct maintenance on wind turbine electrical system components	2.1 Wind turbine electrical system components are replaced, as required, due to faulty operation or maintenance plan requirements in accordance with workplace procedures and manufacturers' recommendations and specifications
	2.2 Documented service checklists, or similar, are followed in accordance with workplace procedures
	2.3 Diagnostic testing and data from monitoring systems is used to identify those components requiring maintenance
	2.4 Wind turbine electrical system components are dismantled, as required, for maintenance in accordance with manufacturers' recommendations and specifications

and workplace procedures

- 2.5 Techniques are used to enable identification or reassembly of wind turbine electrical system components in accordance with workplace procedures
- 2.6 New components are obtained, as required, and are inspected for compliance with manufacturers' recommendations and specifications
- 2.7 Wind turbine electrical system components are tested, monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' recommendations and specifications

3 Complete work

- 3.1 Work is completed and appropriate personnel are notified in accordance with workplace requirements
- 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
- 3.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT442 Maintain wind turbine generator electrical systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT011 Maintain wind turbine electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work in accordance with scheduled requirements
- conducting maintenance on wind turbine generator (WTG) electrical systems
- determining work to permit requirements
- identifying new components for use
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- measuring, inspecting and recording WTG electrical system
- performing isolations
- planning for wind turbine electrical system work
- reassembling and readjusting equipment and components in wind turbine electrical systems
- undertaking diagnostic testing.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- analysis and diagnostic methods and tools
- component identification and replacement
- isolations
- maintenance of wind turbine electrical systems

- measurement techniques
- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- techniques for recognising wiring failure or potential for failure of wind turbine electrical system and components
- test requirements of wind turbine electrical system
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - hazard identification
 - safe working practices
- wind turbine plant and its location at site
- wind turbine system types and characteristics
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT012 Maintain wind turbine mechanical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake maintenance of wind turbine mechanical systems.

Undertaking maintenance is the process of optimising power generation plant and equipment operations through regular inspections and verification of wind turbine mechanical system operational efficiency.

Competency in this unit requires the ability to plan work, conduct maintenance on wind turbine mechanical systems and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are trained and authorised to receive permits to work.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Requirements, including scope of work and assigned roles, are identified and confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
	1.3 Resources are obtained and inspected for compliance with job specification
	1.4 Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
	1.5 Work is planned, sequenced and prioritised in accordance with workplace procedures
	1.6 Work area is prepared in accordance with work requirements and site procedures
2 Conduct maintenance on wind turbine mechanical system components	2.1 Faulty wind turbine mechanical system components are replaced in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Documented service checklists, or similar, are followed in accordance with workplace procedures
	2.3 Diagnostic testing and data from monitoring systems is used to identify components requiring maintenance
	2.4 Wind turbine mechanical system components are dismantled for maintenance in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.5 Maintenance techniques are used to enable identification or reassembly of components in accordance with workplace procedures
	2.6 New components are obtained and inspected for compliance with manufacturers' recommendations and specifications

- 2.7 Turbine mechanical system components are tested, monitored and adjusted, as required, in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Complete work

- 3.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
- 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
- 3.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT444 Maintain wind turbine generator mechanical systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT012 Maintain wind turbine mechanical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work in accordance with scheduled requirements
- conducting maintenance on wind turbine mechanical systems
- determining permit to work requirements
- diagnosing wind turbine mechanical system faults, including interpreting fault data
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- planning for wind turbine mechanical system work
- reassembling wind turbine mechanical system components
- replacing wind turbine mechanical system components
- testing wind turbine mechanical system and components.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- diagnosis techniques for wind turbine mechanical system faults
- maintenance requirements for wind turbine mechanical systems
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- permit to work system
- reassembly techniques for wind turbine mechanical system components

- replacement techniques for wind turbine mechanical system components
- tests for wind turbine mechanical system and components
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- wind turbine generation mechanical system types and characteristics
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT013 Monitor climatic conditions for renewable electricity generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor weather and climate conditions for the purposes of planning electricity generation from renewable sources and ensuring the safety of power generation plant and personnel.

Weather is measured through the assessment of patterns in temperature, humidity, atmospheric pressure, wind, precipitation and other meteorological variables. Climate is the measurement of weather over longer periods of time in specific regions.

Competency in this unit requires the ability to interpret weather and climate information, plan for adverse or extreme weather conditions, take action in response to adverse or extreme weather conditions and complete all documentation. Individuals will, in general, work as a maintenance operative in a power generation facility.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Interpret weather and climate information

- 1.1** Weather, climate information and warnings are regularly monitored to determine likely conditions
- 1.2** Potential variations in weather and climate conditions are assessed in accordance with warnings, weather patterns and historical experience
- 1.3** Possible impact of weather and climate on power generation plant, equipment, grid demand and civil assets are identified

2 Plan for adverse weather conditions

- 2.1** Workplace operational guidelines for adverse weather conditions are accessed and implemented in accordance with workplace procedures
- 2.2** Possible power generation outages and actions to be taken are communicated to key stakeholders

3 Act in response to adverse weather conditions

- 3.1** Work schedules are adjusted in accordance with workplace procedures to account for extreme weather events
- 3.2** Workplace procedures to be followed during, and after, extreme weather events are analysed and discussed with personnel or team members
- 3.3** External assets in the perimeter area of wind turbine generators are prepared in accordance with workplace procedures for extreme weather events
- 3.4** Emergency and evacuation procedures are implemented in accordance with workplace procedures for adverse weather conditions
- 3.5** Stakeholders and key personnel are informed of anticipated impact of weather and climate on power generation plant, equipment, grid demand and civil assets
- 3.6** Meteorological incidents are monitored and preventative actions are taken
- 3.7** Normal operations are recommenced in accordance with workplace procedures after confirmation of return to normal weather conditions and completion of inspection

- 4 Complete documentation**
- 4.1** Workplace documentation is updated in accordance with workplace procedures
 - 4.2** Reports are prepared and presented to key personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT369 Monitor climatic conditions for renewable electricity generation

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT013 Monitor climatic conditions for renewable electricity generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- accessing weather data from monitoring systems
- acting in response to adverse or extreme weather conditions
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- assessing wind speed, wind direction, atmospheric pressure and lightning strike geographical data
- communicating with personnel
- completing documentation
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting weather and climate information
- planning for adverse or extreme weather conditions
- preparing documentation
- undertaking post-weather event damage inspections.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- documentation and reporting requirements
- meteorology
- post-weather event damage inspections
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- risk mitigation processes
- weather data monitoring systems
- weather safety alert systems
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT014 Test and commission wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct testing and commissioning of a wind turbine.

Testing and commissioning of wind turbines includes the assessment and verification that all equipment and components are operating efficiently and are meeting operational requirements.

Competency in this unit requires the ability to plan work, test systems equipment, test system and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Licensing/Certification Information

The application of the skills and knowledge described within this unit may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit. For this unit persons must have one of the following as an entry requirement:

- Unrestricted Electrical Licence issued in an Australian State or Territory, or
- Electrical Fitter Occupational Licence issued in an Australian State or Territory, or
- UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Pre-requisite Unit

Not applicable

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work

- 1.1** Requirements, including scope of work and assigned roles, are identified and confirmed with appropriate personnel or by site inspection in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected for compliance with job specification
- 1.6** Commissioning is planned, sequenced and prioritised in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are implemented in accordance with workplace procedures
- 1.8** Work area is accessed and prepared in accordance with workplace procedures

2 Test system components

- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 2.2** Wind turbine system components are visually inspected to ensure absence of any damage, defects and deterioration in accordance with workplace procedures and commissioning plan
- 2.3** Wind turbine system components are tested in conjunction with other related systems and equipment to ensure correct operation in accordance with workplace

procedures and commissioning plan

- 2.4** Wind turbine wiring systems are checked and tested in conjunction with other related systems and equipment in accordance with workplace procedures and commissioning plan

3 Commission system

- 3.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 3.2** Wind turbine system, plant and components are set up and calibrated in accordance with workplace procedures, operational requirements, and manufacturers' manufacturers' recommendations and specifications
- 3.3** Wind turbine system is commissioned using appropriate plans, drawings and manuals in accordance with workplace procedures and commissioning plan
- 3.4** Wind turbine system is commissioned in conjunction with other related systems and equipment in accordance with workplace procedures and commissioning plan
- 3.5** Wind turbine components are commissioned in accordance with workplace procedures and commissioning plan
- 3.6** Faulty wind turbine components are repaired or reported in accordance with workplace procedures
- 3.7** Final inspection is carried out in accordance with workplace procedures and commissioning plan

4 Complete work

- 4.1** Wind turbine commissioning is completed and appropriate personnel are notified in accordance with workplace procedures
- 4.2** Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 4.3** Tools and equipment are maintained and stored in accordance with workplace procedures
- 4.4** Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT450 Test and commission wind turbine generators.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT014 Test and commission wind turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work in accordance with scheduled requirements
- determining permit to work requirements
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting wind turbine system and wiring
- planning for testing and commissioning wind turbine work
- selecting materials
- testing and commissioning wind turbine system
- testing wind turbine systems equipment
- undertaking isolations
- using data analysis techniques and tools
- utilising tools and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- equipment and materials required
- installation, testing and commissioning practices
- isolations

- layout of wind farm plant, and operation of equipment
- permit to work system
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendation and specifications, and environmental requirements
- test and measurement instruments and techniques for use
- types of wind turbines and wiring systems
- typical arrangements of wind farm power production plant
- wind turbine components and parts
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPL003 Licence to operate a reciprocating steam engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit specifies the outcomes required to operate a reciprocating steam engine for licensing purposes, which includes the operation of steam equipment where the steam acts upon a piston under pressure.

Reciprocating steam engine means equipment that is driven by steam acting on a piston causing the piston to move and includes and expanding (steam) reciprocating engine.

High-risk work (HRW) is classed as the operation of a reciprocating steam engine where the diameter of any piston exceeds 250 millimetres.

This unit requires the operator to plan the work, carry out pre-operational safety checks, start the reciprocating steam engine, monitor the reciprocating steam engine operation, carry out shutdown of reciprocating steam engine for operational and maintenance purposes.

A person performing this work is required to hold a reciprocating steam engine operation HRW licence.

Licensing/Regulatory information

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations, HRW and meets Commonwealth, state and territory HRW licensing requirements.

Any alteration to this unit would result in a unit that would not be acceptable to WHS/occupational health and safety (OHS) regulators for the purpose of licensing.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Licensing

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan work

2 Start reciprocating steam engine

3 Monitor reciprocating steam engine operation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Types of operations to be conducted for a reciprocating steam engine are assessed and prepared
- 1.2** WHS/OHS regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements', and workplace procedures are identified, applied and monitored
- 1.3** Personal protective equipment (PPE) is selected for use in accordance with workplace procedures
- 1.4** Hazards and potential hazards in work area are identified and assessed for risk and controls recommendations are in accordance with workplace procedures
- 1.5** Pre-operational safety checks of reciprocating steam engine and equipment are conducted in accordance with workplace procedures
- 1.6** Maintenance requirements and equipment faults are identified and reported in accordance with workplace procedures
- 1.7** Communication methods are identified according to workplace procedures
- 2.1** Controls are implemented for hazards in work area in accordance with industry standards and workplace procedures
- 2.2** Start-up checks are performed and the reciprocating steam engine is brought on line safely in accordance with workplace procedures
- 2.3** Maintenance requirements are identified and reported in accordance with workplace procedures
- 3.1** Reciprocating steam engine is monitored, including undertaking operational checks, in accordance with workplace procedures

	3.2	Operating log is maintained clearly and accurately in accordance with workplace procedures
	3.3	Information regarding reciprocating steam engine, its status and operation is communicated clearly in accordance with workplace procedures
4 Shut down reciprocating steam engine	4.1	Engine is shut down, including shutdown checks and shut down checks for maintenance in accordance with workplace procedures
	4.2	Reciprocating steam engine is isolated in accordance with workplace procedures
	4.3	Maintenance requirements are identified, recorded and reported in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

relevant standards may include

but not be limited to:

- codes of practice
- legislation
- Australian Standards
- manufacturers' recommendations and specifications

communicated and communication may include

but are be limited to:

- verbal
- written
- telephone
- two-way radio
- log records
- computer record systems

emergencies may include

but not be limited to:

- fire
- bomb threat
- terrorism
- personal accidents
- chemical spills
- major steam leaks
- major water leaks
- flooding
- natural disasters

equipment may include

but not be limited to:

- engine and auxiliary plant
- engine lubrication and power or control oil systems
- hydraulic oil system
- pump
- compressed air system
- steam supply system
- cylinder exhaust system
- computers with equipment control functions
- supervisory, alarm, protection and control equipment
- relevant maintenance equipment

including equipment for:

- lock out for protecting operators and co-workers from accidental injury
- emergency shutdown stopping
- extinguishing fires
- organisational first aid requirements
- evacuation

equipment faults may include

but not be limited to:

- abnormal operating conditions
- loss of a major auxiliary
- excessively high engine and engine valves heating rates or differentials
- high engine bearing temperatures or vibration
- high pressure heater malfunctions
- mechanical or electrical faults or failure
- failed field devices
- engine protection

hazards may include

but not be limited to:

- chemical hazards
- thermal hazards
- manual handling hazards
- guarding of machinery requirements
- illumination of work area
- rubbish and combustibles in area
- leakage of steam
- leakage of oil
- obstructions in work area
- fire
- noise
- vibration
- water
- working at heights

operational checks may include

but not be limited to:

- supply and quality of steam and line pressure
- exhaust system
- safety devices
- speed governor
- vibration level
- lubrication system
- operation and function of valves and fittings
- cylinder drainage system
- operation of control and/or safety devices

personal protective equipment (PPE) may include

but not be limited to:

- prescribed under, regulation, codes of practice and workplace policies and practices

preoperational safety checks may include

but not be limited to:

- supply steam system
- position and operation of engine valves
- lubrication system
- cylinder drainage system
- exhaust system
- auxiliary equipment
- safety devices
- over speed shutdown
- pressure relief devices
- speed governor

procedures may include

but not be limited to:

- manufacturers' recommendations and specifications
- industry operating procedures
- workplace procedures (e.g. work instructions, operating procedures and checklists)

operation of steam equipment may include

- where the steam acts upon a piston under pressure and action of the steam forces the piston to move
- the definition includes all expanding (steam) reciprocating engines, with any piston diameter of greater than 250 millimetres

recorded may include

but not be limited to:

- operations and maintenance of reciprocating steam engine equipment
- difficulties or issues
- environmental issues
- recommendations for future work
- results
- hazards
- incidents or injuries
- dangerous occurrences or equipment
- malfunctions using logbooks
- proformas
- production reports
- maintenance records

shutdown checks may include

but not be limited to:

- steam supply
- cooling process
- load on engine
- cylinder drains
- auxiliary equipment

shutdown checks for maintenance may include but not be limited to:

- checks of cooling down process
- isolation of steam
- isolation from any common connection
- opening of all access points required for inspection

start-up checks may include

but not be limited to:

- heat input
- steam supply system
- steam traps and steam line purge systems operation
- engine warmed up
- lubrication system
- drainage system
- operation and position of engine valves and fittings
- operation of auxiliary equipment
- freedom of rotation of engine
- warm up of reticulation system
- reticulation line pressure

testing may include

but not be limited to:

- loss of a major auxiliary controls
- response checks
- standby plant cut-in tests
- valves operating checks
- on load engine valve and emergency governor operation test
- performance tests
- valve operation tests
- alarm and protection tests.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPL002 Licence to operate a reciprocating steam engine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPL003 Licence to operate a reciprocating steam engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating effectively and working safely with others in the work area
- completing verification of problems and equipment faults and demonstrating relevant response procedures
- complying with Commonwealth, state or territory regulations for the acquisition of a high-risk work (HRW) licence for reciprocating steam engine operation
- complying with legislation, regulations, standards, codes of practice and established safe practices and procedures for starting, operating, shutting down and maintaining a reciprocating steam engine
- complying with organisational and site policies and procedures, including quality requirements and state or territory legislation, applicable to workplace operations
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying hazards associated with the operation of the reciprocating steam engine and putting in place effective hazard controls for those hazards identified
- performing efficiently and safely when starting, operating, shutting down and maintaining a reciprocating steam engine
- recording accurately and maintaining information relating to operation of a reciprocating steam engine
- starting up, monitoring and shutting down a reciprocating steam engine effectively that meets the definition of this licence class
- undertaking diagnostic and testing techniques for reciprocating steam engines
- using relevant communication techniques with colleagues and others
- utilising relevant tools and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- confined space awareness and the limits for entry into a confined space
- engine speed control equipment
- environmental protection requirements relating to the disposal of waste material and storage of environmentally hazardous materials
- established communication channels and protocols in the workplace
- hierarchy of hazard identification and control
- organisational and workplace standards, requirements, policies and procedures for starting, operating, shutting down and maintaining a reciprocating steam engine
- principles of heat transfer and thermodynamics
- procedures for the recording, reporting and maintenance of workplace records and information
- reciprocating steam engine capabilities and components
- reciprocating steam engine fault-finding and problem-solving techniques
- reciprocating steam engine operations and operating techniques
- reciprocating steam engine safety devices and testing techniques
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements relevant to the full range of techniques for operating reciprocating steam engines
- routine problems encountered in the process and equipment and adjustments required for correction
- safety data sheets (SDS) and material handling methods
- system components and interaction with other plant and equipment
- types of tools and equipment and procedures for use, operation and maintenance
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices.

Assessment Conditions

Assessments must be conducted by an assessor accredited for this HRW licence class in the Commonwealth, state or territory where the licence will be obtained (i.e. an assessor authorised by a Commonwealth, state or territory WHS/OHS regulator).

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Assessment of performance must be undertaken in the workplace and/or under realistic workplace conditions which typically reflect:

- performing tasks and activities within timelines that would be expected in a workplace
- standard and authorised work practices, safety requirements and environmental constraints
- using full scale equipment

The use of simulators in the assessment of this unit of competency is not acceptable.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools and equipment and currently used in industry, including:
 - personal protective equipment (PPE) for performance assessment
 - appropriate safety equipment in safe condition
 - appropriate reciprocating steam engine and associated equipment in safe condition
 - communication equipment, as required
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPL004 Licence to operate a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit specifies the outcomes required to operate a steam turbine for licensing purposes. Steam turbine means equipment that is driven by steam acting on a turbine or rotor to cause a rotary motion.

It covers the operation of any steam turbine (except a steam turbine that produces a power output of less than 500 kW) that:

- is multi-wheeled
- is capable of a speed greater than 3600 r.p.m., or
- uses attached condensers. or
- a multi-staged heat exchange extraction process.

This unit requires the operator to plan the work, carry out preoperational safety checks, start the steam turbine, monitor steam turbine operation and shutdown the steam turbine.

A person performing this work is required to hold a turbine operation high-risk work (HRW) licence.

Licensing/Regulatory information

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations, HRW and meets Commonwealth, state and territory HRW licensing requirements.

Any alteration to this unit would result in a unit that would not be acceptable to WHS/occupational health and safety (OHS) regulators for the purpose of licensing.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Licensing

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Type of operations to be conducted for steam turbine are assessed and prepared in accordance with workplace procedures
- 1.2 WHS/OHS regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3 Steam turbine operations are planned in accordance with workplace procedures
- 1.4 Personal protective equipment (PPE) is selected for use in accordance with workplace procedures
- 1.5 Hazards and potential hazards in work area are identified and assessed for risk, and controls recommended are in accordance with workplace procedures
- 1.6 Relevant communication methods are identified in accordance with workplace procedures

2 Start up steam turbine

- 2.1 Downstream user of output power from steam turbine is advised of start-up
- 2.2 Controls are implemented for identified hazards and potential hazards in work area in accordance with workplace procedures
- 2.3 Availability of quality steam from upstream provider is confirmed
- 2.4 Preoperational safety checks of steam turbine are conducted in accordance with workplace procedures
- 2.5 Start-up checks are performed upon ancillary plant

	2.6	Maintenance requirements are identified and reported in accordance with workplace procedures
	2.7	Steam turbine is started and brought up to speed and placed online safely, including performance of start-up checks, in accordance with workplace procedures
3 Monitor steam turbine operation	3.1	Steam turbine is monitored, including performing of operational checks and fault finding, in accordance with workplace procedures
	3.2	Operating log is maintained clearly and accurately in accordance with workplace procedures
	3.3	Operating status of steam turbine is diagnosed and verified in accordance with workplace procedures
	3.4	Status of steam turbine is communicated to other operational personnel, including downstream users of steam turbine output power, in accordance with workplace procedures
	3.5	Steam turbine emergencies and contingencies are dealt with in accordance with manufacturers' recommendations and specifications, environmental regulations and workplace procedures
4 Shut down steam turbine	4.1	Energy isolation procedures are followed
	4.2	Routine shutdown of steam turbine is performed, including performing shutdown checks in accordance with operational and manufacturers' recommendations and specifications, and workplace procedures
	4.3	Maintenance requirements are identified, recorded and reported in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation

Sector Training Package Companion Volume Implementation Guide.

relevant standards may include

but not be limited to:

- codes of practice
- legislation
- Australian Standards
- manufacturers' specifications

communicated and communication may include

• but not be limited to:

- verbal
- written
- telephone
- two-way radio
- log records
- computer record systems

emergencies may include

• but not be limited to:

- fire
- bomb threat
- terrorism
- personal accidents
- chemical spills
- major steam leaks
- major water leaks
- flooding
- natural disasters

faults may include

• but not be limited to:

- abnormal operating conditions
- loss of a major auxiliary
- steam turbine water ingress
- wet steam
- excessively high turbine and turbine valves heating or cooling rates and differentials
- loss of condenser vacuum
- condenser tube leak
- conductivity
- high steam turbine bearing temperatures or vibration
- high or low bearing oil temperatures
- loss of steam turbine bearing oil flow or pressure

hazards may include

- low or high-pressure heater malfunction
- actuator, valve, mechanical and electrical faults or failure
- instrument failure
- steam turbine protection
- but not be limited to:
 - chemical hazards
 - thermal hazards
 - manual handling hazards
 - guarding of machinery requirements
 - illumination of work area
 - rubbish and combustibles in area
 - leakage of steam
 - leakage of oil
 - obstructions in the work area
 - fire
 - noise
 - vibration
 - water and working at heights

operational checks may include

- but not be limited to:
 - quality of steam supply
 - cooling water system
 - condenser operation
 - position and operation of valves and fittings
 - cylinder drainage system
 - lubrication system
 - speed control
 - vibration level
 - steam reticulation line pressure
 - operation of control or safety devices

personal protective equipment (PPE) may include

- but not be limited to:
 - prescribed under, regulations, codes of practice and workplace policies and procedures

preoperational safety checks may include

- but not be limited to:
 - steam supply system
 - position and operation of steam turbine valves
 - safety devices

- overspeed shutdown
 - pressure relieve devices
 - speed governor
 - exhaust system
 - auxiliary equipment
 - lubrication system
- procedures may include
- but not be limited to:
 - manufacturers' instructions, specifications or checklists
 - industry operating procedures
 - workplace procedures, including instructions, operating procedures and checklists
- recorded information may include
- but not be limited to:
 - operations and maintenance of steam turbine equipment
 - difficulties or issues
 - environmental issues
 - recommendations for future work
 - results
 - costs
 - hazards
 - incidents or injuries
 - dangerous occurrences or equipment malfunctions
 - logbook and proformas
 - production reports and maintenance records
- simulated training may include
- reproduction of conditions in working situation
 - enabling tasks to be learned and practised safely and economically
- shutdown checks may include
- but not be limited to:
 - checks of cooling down process
 - steam supply isolated
 - load on steam turbine
 - auxiliary equipment shutdown
 - cylinder drain system
 - isolation from any common connection
- start-up checks must include
- but not be limited to:
 - position and operation of valves and

	• fittings • operation of lubrication system • operation of drainage system • steam quality • heat input • operation of auxiliary equipment • freedom of rotation of steam turbine • steam turbine warmup • operation of steam traps and steam line purge systems • warm up of reticulation system • reticulation line pressure
equipment must include	• where steam acts on a steam turbine or rotor to cause a rotary motion with any or all the following features: • attached condensers • multi-wheeled • multi-staged heat exchange extraction process at speed greater than 3600 r.p.m. may include: • axial flow • back pressure • condensing • non-condensing pass-out • radial flow • steam turbines with a power output of greater than 500 kw • the operation may be assisted by remote indicators of plant status and other parameters monitored (e.g. central control stations), in wet, noisy, dusty or hot areas or during continuous operation
steam turbine emergencies and contingencies may include	• but not be limited to: • identification of type of emergency • isolation of steam supply • selection and application of relevant firefighting equipment • notification of upstream steam supplier • operation of steam turbine only when safe to do so
testing may include	• but not be limited to:

- loss of a major auxiliary controls
- response checks
- standby plant tests
- valves operating checks
- emergency governor operation test
- performance tests
- alarm and protection tests.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPL001 Licence to operate a steam turbine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPL004 Licence to operate a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating effectively and working safely with others in the work area
- completing verification of problems and steam turbine equipment faults and demonstrating relevant response procedures
- complying with Commonwealth, state or territory regulations for the acquisition of a high-risk work (HRW) licence for steam turbine operation
- complying with organisational and site policies and procedures, including quality requirements and state or territory legislation applicable to workplace operations
- complying with WHS/OHS regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- controlling and monitoring any ancillary equipment connected or interfaced to the steam turbine recording accurately and maintaining information related to operation of a steam turbine
- establishing safe practices and procedures for starting, operating, shutting down and maintaining a steam turbine
- identifying hazards associated with the operation of the steam turbine and putting in place effective hazard controls for those hazards identified
- performing efficiently and safely when starting, operating, shutting down and maintaining a steam turbine
- starting up, monitoring and shutting down a steam turbine effectively which meets the definition of this licence class
- undertaking diagnostic and testing techniques as applied to steam turbines
- using relevant communication techniques with colleagues and others
- utilising relevant tools and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- communication channels and protocols in the workplace
- confined space awareness and the limits for entry into a confined space
- environmental protection requirements relating to the disposal of waste material and storage of environmentally hazardous materials
- organisational and workplace standards, requirements, policies and procedures for starting, operating, shutting down and maintaining a steam turbine
- principles of heat transfer and thermodynamics
- procedures for the recording, reporting and maintenance of workplace records and information
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements relevant to the full range of techniques for operating steam turbines
- routine problems encountered in the process and equipment and adjustments required for correction
- safety data sheets (SDS) and material handling methods
- steam turbine capabilities and components
- steam turbine fault-finding and problem-solving techniques
- steam turbine operations and operating techniques
- steam turbine safety devices and testing techniques
- steam turbine speed control equipment
- system components and interaction with other plant and equipment
- understanding of the hierarchy of hazard identification and control
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices.

Assessment Conditions

Assessments must be conducted by an assessor accredited for this HRW licence class in the Commonwealth, state or territory where the licence will be obtained (i.e. an assessor authorised by a Commonwealth, state or territory WHS/OHS regulator).

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment of performance must be undertaken in the workplace and/or under realistic

workplace conditions which reflect:

- performing tasks and activities within timelines that would be expected in a workplace
- standard and authorised work practices, safety requirements and environmental constraints
- using full scale equipment.

The use of simulators in the assessment of this unit of competency is acceptable.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools and equipment used in industry, including:
 - personal protective equipment (PPE) for performance assessment
 - appropriate safety equipment in safe condition
 - appropriate steam turbine and associated equipment in safe condition
 - communication equipment, as required
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS001 Analyse single protection device operation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to analyse the operation of single protection devices.

Protection devices aim to keep power generation systems stable by isolating the components that are faulty to ensure the network still in operational. Single operation protection devices are designed for specific types of apparatus used in power generation facilities.

Competency in this unit requires the ability to respond to single protection device operation, interpret and determine cause of single protection device operation, restore single protection device operation and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator. Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Respond to protection

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Electrical and mechanical single protection device

operation	operations are confirmed in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements, and workplace procedures are identified, applied and monitored
	1.3 Apparatus affected by single protection device operations are identified in accordance with workplace procedures
	1.4 Single protection device targets, flags and alarms are identified and recorded in accordance with workplace procedures
	1.5 Relevant stakeholders are advised in accordance with workplace procedures
2 Interpret and determine cause of protection operation	2.1 Communication with external stakeholders and internal personnel is undertaken and recorded in accordance with workplace procedures
	2.2 Information on single protection device operations is collated and assessed in accordance with workplace procedures
	2.3 Sequence of events prior to, and following, single protection device operation is identified and analysed in accordance with workplace procedures
	2.4 Single protection device operations are analysed and evaluated in accordance with workplace procedures
	2.5 Single protection device operation findings are analysed, in conjunction with recorded data, to determine most probable cause of fault in accordance with workplace procedures
3 Restore protection	3.1 Relevant stakeholders are informed of single protection device operation findings and plan of action in accordance with workplace procedures
	3.2 Single protection device indicators are reset in accordance with workplace procedures
	3.3 Corrective action is taken in accordance with fault type

and workplace procedures

- 4 Complete documentation**
- 4.1** All single protection device operations events are analysed and reported to approved personnel in accordance with workplace procedures
 - 4.2** Records are updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS342 Analyse single protection device operation.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS001 Analyse single protection device operation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry –Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with stakeholders
- completing documentation
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting and analysing cause of electrical and mechanical single protection devices operation
- interpreting and determining cause of single protection device operations
- responding to electrical and mechanical single protection device operations
- responding to single protection device operations
- restoring electrical and mechanical single protection device status
- restoring single protection devices
- using manuals.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- alarms and flags raised by single protection devices
- causes of single protection devices operation
- fault-finding methods and tools
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- resetting and restoring electrical and mechanical protection
- single protection devices
- single protection systems and schemes, including electrical and mechanical protection
- stakeholder communication
- types of electrical and mechanical faults
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS002 Apply environmental and sustainable energy procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Training Sector Package Release 2.0.

Application

This unit involves the skills and knowledge required for the implementation of environmental procedures in the workplace. It also includes identifying, assessing and controlling environmental risks, and assessing the impact of work-related activities.

Environmental risks can include air, soil and water pollution, wildlife and habitat loss and global warming emissions.

Competency in this unit requires the ability to plan for quality control, monitor quality control and complete all documentation. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Relate environmental procedures to specific work site

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures

2 Implement environmental procedures

- 2.1** Environmental and sustainable energy procedures are applied to specific worksite in accordance with workplace procedures
- 2.2** Environmental risks and impacts are identified in accordance with workplace procedures
- 2.3** Environmental risks and impacts are assessed in accordance with workplace procedures
- 2.4** Environmental risks and impacts are controlled and monitored throughout work activities in accordance with workplace procedures
- 2.5** Environmental incidents are dealt with and contingency strategies are implemented in accordance with emergency procedures and workplace procedures
- 2.6** Environmental and sustainable energy work is conducted in accordance with principles of sustainable energy and energy conservation workplace procedures
- 2.7** Provision for recycling and reuse of materials is undertaken, where possible, in accordance with workplace procedures
- 2.8** Environmental incidents are reported and recorded in accordance with workplace procedures

3 Report and review environmental procedures

- 3.1** Environmental and sustainable energy processes are monitored and documented in accordance with workplace procedures
- 3.2** Environmental risks, potential impacts and incidents are monitored and reported in accordance with workplace procedures

- 3.3** Participation and contribution into reviews of environmental and sustainable energy procedures are carried out in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS356 Apply environmental and sustainable energy procedures.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS002 Apply environmental and sustainable energy procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Training Sector Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying environmental risk assessment processes
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- recycling and reusing materials
- reporting on environmental incidents
- using manuals
- utilising environmental and sustainable energy principles and practices
- working with, monitoring and reviewing environmental procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- environmental and sustainable energy principles and practices
- environmental incidents
- environmental risk assessment processes
- implementation, monitoring and reviewing environmental procedures
- manuals
- methods of identifying environmental impacts
- recycling and reuse of materials
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- WHS/OHS requirements, including
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS003 Apply quality systems to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry –Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to apply a quality assurance system to work.

Quality control is a process to ensure that significant variations in quality are kept to a minimum. Quality control in a power generation facility will focus on a set of procedures intended to ensure that personnel, plant and equipment operate smoothly and efficiently.

Competency in this unit requires the ability to plan and prepare quality procedures, conduct quality system practices and initiate changes to quality systems. Individuals will, in general, work as an operator in a power generation facility.

No licensing, legislative or certification requirements apply from this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare to work with quality systems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Quality procedures are identified from relevant personnel and documentation in accordance with workplace procedures

	1.2	Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3	Performance objectives are identified in accordance with Quality Management System (QMS) and workplace procedures
	1.4	Work plan is structured to ensure quality standards are achieved in accordance with workplace procedures
2 Conduct quality system practices	2.1	Quality assurance processes and procedures are implemented in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2	Work is monitored against quality standards and sustainable energy principles, and clarified with relevant personnel in accordance with workplace procedures
	2.3	Allocated work tasks are completed in accordance with quality assurance requirements and workplace procedures
3 Initiate changes to quality systems	3.1	Improvements to quality assurance procedures are identified by analysis of system outcomes in accordance with quality assurance requirements and workplace procedures
	3.2	Extent of proposed changes to quality procedures are investigated in accordance with quality assurance requirements and workplace procedures
	3.3	Proposed improvements are negotiated and confirmed with relevant personnel in accordance with quality assurance requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS202 Apply quality systems to work.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS003 Apply quality systems to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry –Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying continuous improvement techniques
- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements contributing to quality control audits
- identifying quality procedural change requirements
- improving quality control procedures
- initiating changes to quality assurance processes and procedures
- planning and preparing for quality control
- using recording procedures for documenting
- utilising sustainable energy principles and practices
- working with quality assurance procedures, tools and techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- continuous improvement
- continuous improvement techniques
- principles of sustainable energy practice
- procedural quality change requirements
- quality control
- quality control audits, including improvement implementation

- Quality Management System (QMS) tools and techniques
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- WHS/OHS, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS004 Carry out operational checks on in-service electrical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct operational checks on in-service electrical plant.

Operational maintenance checks need to be undertaken regularly to ensure the smooth and efficient operation of all in-service electrical plant in the power generation facility.

Competency in this unit requires the ability to plan, carry out in-service electrical checks on electrical plant and completion of work. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan for electrical plant in-service checks

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Electrical plant status and work requirements are confirmed with relevant personnel and by site inspection in accordance with workplace procedures
- 1.4** Equipment is checked for correct calibration and operation in accordance with workplace procedures
- 1.5** Correct size, type and quantity of materials and components are obtained and inspected for compliance with work requirements in accordance with workplace procedures
- 1.6** Potential hazards are identified and risk control measures are implemented in accordance with the workplace procedures
- 1.7** Pre-access checks are carried out in accordance with workplace procedures

2 Carry out in-service electrical checks

- 2.1** Electrical plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Electrical plant checks are monitored to detect deviations from normal operation in accordance with workplace procedures
- 2.3** Electrical plant integrity and personnel safety are maintained through consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures

3 Complete work

- 3.1** Electrical plant control measures are returned to required operational status on completion of checks in accordance with workplace procedures

- 3.2 Relevant personnel are notified of completion of work in accordance with workplace procedures
- 3.3 Electrical plant problems or abnormalities are reported in accordance with workplace procedures
- 3.4 Operational check results are documented in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS371 Carry out operational checks on in-service electrical plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS004 Carry out operational checks on in-service electrical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and includes:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- carrying out operational checks on in-service electrical plant
- communicating with personnel
- completing documentation and reporting on electrical plant using recording procedures
- identifying electrical plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- interpreting remote indication of electrical plant status and condition
- maintaining electrical plant integrity
- preparing and planning electrical plant and equipment
- recognising abnormal electrical plant operating conditions using data acquisition techniques and tools
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- electrical plant and equipment, location and operating parameters
- electrical plant status
- manuals
- operational checks on in-service electrical plant

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS005 Clean plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to clean industrial plant, machinery and surrounds associated with electricity generation stations and related surroundings. It may also include the removal of excess, or oil-based, soil.

The removal of impurities is required to facilitate repairs, maintenance, refurbishment or the inspection of plant and machinery. Cleaning, therefore, is often the first task performed in the maintenance, repair and overhaul of power generation plant.

Competency in this unit requires the ability to plan and prepare for the cleaning of industrial plant and equipment, conduct cleaning and complete work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1 Plan and prepare for work**
- 1.1** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
 - 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
 - 1.3** Resources, including cleaning agents, personal protective equipment (PPE) and tools, are obtained and inspected for compliance with job specifications in accordance with safety data sheets (SDS) and workplace procedures
 - 1.4** Work is sequenced and prioritised in accordance with workplace procedures
 - 1.5** Potential hazards are identified, and prevention and risk control measures are implemented in accordance with workplace procedures
 - 1.6** Work area is prepared in accordance with workplace procedures
- 2 Conduct industrial plant and equipment cleaning**
- 2.1** Isolations are confirmed with relevant personnel in accordance with workplace procedures
 - 2.2** Surfaces are applied, where required, with suitable cleaning agent to assist in release of soil or oil residue in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.3** Cleaning equipment and accessories are operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.4** Industrial plant and equipment are cleaned in accordance with the workplace procedures
 - 2.5** Residual waste is directed to suitable disposal points in accordance with environmental regulations and workplace procedures
 - 2.6** Final cleaning inspection is carried out in accordance with workplace procedures

3 Complete industrial plant and equipment cleaning

- 3.1** Cleaning is completed and relevant personnel are notified in accordance with workplace procedures
- 3.2** Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3** Industrial plant, tools and equipment are maintained and stored in accordance with workplace procedures
- 3.4** Cleaning completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS211 Clean plant and equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS005 Clean plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying material handling procedures
- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
 - using personal protective equipment (PPE)
- communicating with personnel
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- directing residual waste to disposal points
- handling hazardous materials
- planning cleaning work
- protecting power generation plant or equipment
- selecting relevant cleaning methods and using cleaning techniques and procedures on industrial plant and equipment
- using manuals
- using safety data sheets (SDS)
- working with isolations and permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- cleaning equipment and accessories

- cleaning methods
- disposal points
- hazardous materials
- isolations
- manuals
- material handling procedures
- permit to work system
- protection of power generation plant and equipment
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- SDS
- types of cleaning agents, properties and application
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification
 - PPE
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS006 Collect and analyse hydrological and meteorological data

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to predict and determine inflows in catchment areas within a hydro-powered electricity generation system.

Inflow forecasting for hydro-powered electricity generation systems depends on several elements such as weather, snow cover, ground conditions and the run-off process in catchment areas. All these elements help give insight into future water availability.

Competency in this unit requires the ability to plan for work, plan and prepare to conduct data collection, undertake data collection, verify and report data collection and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS122 Perform process plant inspection

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for work related issues	1.1 Work health and safety (WHS)/Occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational check on hydrological and meteorological equipment is carried out in accordance with workplace procedures
2 Plan and prepare to conduct data collection	2.1 Hydrological and meteorological equipment is selected to conduct data collection in accordance with workplace procedures
	2.2 Hydrological and meteorological equipment is recalibrated for preparation of survey in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.3 Potential hydrological and meteorological hazards are assessed, and risk control measures are implemented in accordance with workplace procedures
	2.4 Meteorological charts and data are assessed for use in accordance with workplace procedures
3 Undertake data collection	3.1 Measurement site in catchment area is established in accordance with workplace procedures
	3.2 Hydrological and meteorological instrumentation is set out in the catchment area in accordance with manufacturers' recommendations and specifications, and workplace procedures
	3.3 Measurements are taken in accordance with workplace procedures
	3.4 Measurements are recorded in accordance with workplace procedures
	3.5 Tools and equipment are cleaned and stored in accordance with workplace procedures
4 Verify and report data	4.1 Measurements are analysed to verify accuracy of

findings, and data is entered into data system in accordance with workplace procedures

- 4.2** Work order requirements are completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS431 Collect and analyse hydrological and meteorological data.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS006 Collect and analyse hydrological and meteorological data

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing meteorological and hydrographical data using analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- completing documentation
- coordinating the operation of meteorological and hydrographical instrumentation and equipment to:
 - conduct and calculate depth measurements
 - determine inflows based on snow melt
 - measure snow depth and stream flows
- displaying safety procedures in remote locations, including survival techniques
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- planning and preparing to conduct data collection
- recognising abnormal meteorological and hydrographical conditions
- interpreting manuals
- undertaking data collection
- verifying and reporting data collection.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- calibration of meteorological and hydrographical instrumentation
- inflow forecasting

- interpretation of hydrological and meteorological data using analysing tools and techniques
- interpreting meteorological charts
- manuals
- meteorological and hydrographical equipment, location and operating parameters
- personal safety and working alone in remote locations
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- snow depth gauging
- stream gauging
- survival techniques, including hypothermia and snake avoidance
- water quality monitoring
- WHS/OHS requirements, including:
 - risk control measures
 - emergency procedures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS007 Conduct chemical batching operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct mixing of chemicals for the treatment of a primary substance.

A chemical that is needed in the workplace in a small amount (i.e. a speciality chemical) is usually made through using a batching process. Considerable care with all compounds and substances must be undertaken when conducting chemical batching operations due to toxicity.

Competency in this unit requires the ability to plan work, perform chemical batching and the completion of work. Individuals will, in general, work as an operator in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work requirements are identified and confirmed with relevant personnel in accordance with workplace procedures

	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Potential hazards are identified, and risk control measures are selected in accordance with workplace procedures 1.4 Resources, including safety data sheets (SDS) and personal protective equipment (PPE), are inspected and used in accordance with workplace procedures
2 Perform chemical batching	2.1 Staff are notified on commencement and completion of chemical batching work in accordance with workplace procedures 2.2 Chemical requirements for batching are calculated in accordance with job requirement and workplace procedures 2.3 Correct chemical is added to tank or chemical batching plant in accordance with workplace procedures 2.4 Demineralised water is added to chemical batch to correct level in accordance with workplace procedures 2.5 Mixing device is operated in accordance with workplace procedures 2.6 Worksite is left clean and safe to ensure personnel safety and power generating plant integrity in accordance with workplace procedures
3 Complete documentation	3.1 Chemical batching problems are reported in accordance with workplace procedures 3.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS245 Conduct chemical batching operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS007 Conduct chemical batching operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying power generating plant status using diagnostic and testing techniques
- organising resources
- performing chemical batching
- planning and preparing work
- preparing chemical batching plant and equipment for operation
- safely handling hazardous materials
- using risk mitigation processes such as safety data sheets (SDS).

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- chemical batching operations
- chemicals, uses and hazards
- power generating plant and equipment, location and operating parameters
- power generating plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- risk mitigation processes, including SDS
- safe handling of hazardous materials
- types of chemicals, properties and precautions to be taken
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices, including PPE
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS008 Operate and monitor control room site in a multi-function environment

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Application

This unit involves the skills and knowledge required to operate and monitor an electricity supply generation control room site in conjunction with others managing site facilities such as water treatment, steam production or gas production.

Routine work can include undertaking activities such as the operation of generation plant systems, operating and monitoring maintenance on equipment.

Competency in this unit requires the ability to carry out routine work activities in an electricity supply industry generation environment or a production facility incorporating an electrical supply generation facility. Individuals will work, under supervision, as an operator in an electricity supply generation facility.

No licensing, legislative or certification requirements apply to unit at the time of publication

Pre-requisite Unit

Not applicable

Competency Field

Operations

Unit Sector

Electricity Generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to operate and monitor work activities

- 1.1** Work requirements for electricity generation systems are identified from relevant personnel and documentation, in accordance with permit and workplace procedures
- 1.2** Work Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements', and workplace procedures are identified, applied and monitored
- 1.3** Tools, equipment and Personnel Protective Equipment (PPE) are identified and checked, in accordance with workplace procedures
- 1.4** Relevant personnel are consulted, and work is coordinated on site, in accordance with workplace procedures
- 1.5** Resources and materials are confirmed, in accordance with workplace procedures
- 1.6** Schedule of work, including Safety Data Sheets (SDS), manual handling techniques and PPE are confirmed, in accordance with workplace procedures
- 1.7** Electronic monitoring and data reporting devices are identified and checked, in accordance with workplace procedures.

2 Carry out operate and monitor activities

- 2.1** Hazards are identified and risk controls are implemented, in accordance with workplace procedures
- 2.2** Schedule of work for plant is followed and work activities are completed, in accordance with workplace procedures
- 2.3** Work practices for control room operations and monitoring are applied, in accordance with workplace procedures
- 2.4** Alarm response and coordination from relevant personnel for unplanned events are applied, in accordance with workplace procedures
- 2.5** Response and coordination from relevant personnel for unplanned events are undertaken, in accordance with workplace procedures

	2.6	Continuous checks on plant systems to ensure work and requirements are undertaken in accordance with workplace procedures
3 Completed operate and monitor activities	3.1	Final checks of systems to ensure work and requirements are completed in accordance with workplace procedures
	3.2	Relevant personnel are notified of work completion, in accordance with workplace procedures
	3.3	Tools, equipment, resources and materials are cleaned, checked and returned to storage, in accordance with workplace procedures
	3.4	Work area is cleaned and made safe, in accordance with workplace procedures
	3.5	Records are updated, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS008 Operate and monitor control room site in a multi-function environment

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying alarm response including:
 - validation
 - coordination
 - priority and
 - escalations
- applying protocols and procedures between control rooms
- applying Work Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures and
 - safe working practices
- checking work results
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements.
- dealing with unplanned events
- identifying protocols and procedures between control rooms
- interpreting manufacturers' specifications and manuals
- managing screen based equipment including the full range of application.
- operating and monitoring electricity generation systems
- preparing to undertake routine work activities
- using access permit
- using tools, resources and materials.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- alarm response including:
 - validation
 - priority and
 - escalations
- electrical supply industry routine tasks
- manuals
- operate and monitor electricity generation systems
- access permit
- potential hazards
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- types of electricity generation plant
- operating protocols between control rooms
- remote telemetry and data acquisition
- Supervisory Control and Data Acquisition (SCADA)
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures
- operational protocols with third parties

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS009 Conduct minor electrical maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a range of minor maintenance functions associated with electrical equipment. Minor is defined as work that is of lesser seriousness or significance in electrical maintenance.

Electrical equipment includes any machine powered by electricity used in a power generation facility. Electrical maintenance should be undertaken regularly to ensure the smooth operation of all relevant equipment.

Competency in this unit requires the ability to plan work, conduct minor electrical maintenance and the completion of work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3 Resources are obtained and inspected for compliance with job specification in accordance with workplace procedures
	1.4 Plans, drawings and manuals are selected and used in accordance with workplace procedures
	1.5 Correct size, type and quantity of materials and components are obtained and inspected in accordance with workplace procedures
	1.6 Electrical maintenance work is sequenced and prioritised in accordance with and workplace procedures
	1.7 Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures
	1.8 Work area is prepared in accordance with workplace procedures
2 Perform minor electrical maintenance	2.1 Isolations are confirmed in accordance with workplace procedures
	2.2 Minor adjustments are performed on electrical equipment in accordance with maintenance schedule and workplace procedures
	2.3 Electrical maintenance faults are reported in accordance with workplace procedures
3 Complete work	3.1 Electrical maintenance work is completed and relevant personnel are notified in accordance with workplace procedures
	3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures

- 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
- 3.4 Electrical maintenance work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS206 Conduct minor electrical maintenance.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS009 Conduct minor electrical maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing electrical maintenance work
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- documenting records
- performing isolations
- planning and preparing for electrical maintenance work
- conducting minor electrical maintenance work
- using permit to work system
- utilising electrical maintenance techniques and procedures
- using equipment isolation procedures
- working to maintenance schedule.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- electrical maintenance techniques and procedures
- isolations
- maintenance schedules
- manuals
- permit to work system

- record and documentation requirements
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS010 Conduct minor mechanical maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a range of minor maintenance functions associated with mechanical equipment. Minor is defined as work that is of lesser seriousness or significance in mechanical maintenance.

Mechanical equipment in a power generation facility can include a variety of plant, machinery and power tools that may contain computers and sensors to monitor and enhance performance.

Competency in this unit requires the ability to plan work, conduct minor maintenance and complete work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work requirements are identified from relevant personnel and documentation in accordance with

workplace procedures

- 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3 Resources are obtained and inspected for compliance with job specification in accordance with workplace procedures
- 1.4 Plans, drawings and manuals are selected and used in accordance with workplace procedures
- 1.5 Correct size, type and quantity of materials and components are obtained and inspected for compliance in accordance with job specification and workplace procedures
- 1.6 Mechanical equipment work is sequenced and prioritised in accordance with workplace procedures
- 1.7 Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures
- 1.8 Work area is prepared in accordance with workplace procedures

2 Perform minor mechanical maintenance

- 2.1 Isolations are confirmed in accordance with workplace procedures
- 2.2 Minor mechanical equipment adjustments are performed in accordance with maintenance schedules, and workplace procedures
- 2.3 Mechanical equipment faults are reported to relevant personnel in accordance with workplace procedures

3 Complete work

- 3.1 Mechanical equipment work is completed and relevant personnel are notified in accordance with workplace procedures
- 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3 Tools and equipment are maintained and stored in

accordance with workplace procedures

- 3.4** Mechanical equipment work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS205 Conduct minor mechanical maintenance.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS010 Conduct minor mechanical maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing minor mechanical work
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- complying with maintenance schedule
- conducting minor mechanical maintenance work
- documenting records
- performing isolations
- planning and preparing for minor mechanical work
- using equipment
- utilising mechanical maintenance techniques and procedures
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- isolations
- maintenance schedules
- manuals
- mechanical maintenance techniques and procedures
- permit to work system

- record and documentation requirements
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS011 Conduct multiple energy source isolation procedures for permit to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the application of permit to work procedures where multiple energy sources require isolation for safe access to high voltage (HV), low voltage (LV) and mechanical apparatus.

Permits to work are a formal system used to control high-risk activities in power generation facilities. They specify the control measures that will be put in place to minimise risks. Permits ensure that all hazards and precautions have been considered before any hazardous work begins.

Competency in this unit requires the ability to plan and prepare for isolation, de-isolation and restoration; perform isolation and perform de-isolation and restoration. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS017 Conduct single energy source isolation procedures for permit to work

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for multiple energy source isolation

- 1.1** Work requirements, including permit to work, are identified from relevant personnel and site inspection in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Materials, tools, equipment and resources, and permit to work requirements are requisitioned and inspected for compliance in accordance with workplace procedures
- 1.4** Isolation work is sequenced in accordance with permit to work and workplace procedures
- 1.5** Isolation work is prioritised in accordance with permit requirements and workplace procedures
- 1.6** Permit to work and risk assessment are coordinated with other personnel involved and affected by isolations in accordance with workplace procedures
- 1.7** Personnel participating in work are briefed and roles and responsibilities are confirmed in accordance with workplace procedures

2 Perform multiple energy source isolation

- 2.1** Multiple energy source to be isolated is correctly identified in accordance with workplace procedures
- 2.2** Isolation is performed in accordance with workplace procedures and permit to work requirements
- 2.3** Verification of isolation, dissipation and restraint of energy sources is performed in accordance with workplace procedures
- 2.4** Isolation is confirmed in accordance with workplace procedures

3 Perform multiple energy source de-isolation and restoration

- 3.1** Multiple energy source de-isolation and restorations are performed in accordance with permits and workplace procedures
- 3.2** Multiple energy source de-isolations are confirmed in

accordance with workplace procedures

- 3.3** Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS402 Conduct multiple energy source isolation procedures for permit to work.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS011 Conduct multiple energy source isolation procedures for permit to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- completing documentation
- coordinating and briefing others on permit to work
- identifying power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting plant drawings, diagrams and manuals
- performing isolations, de-isolations and restorations
- planning and preparing for isolation, de-isolation and restoration
- preparing power generating plant or equipment for isolation operation
- using permit to work system
- working with equipment, tools, materials and resources.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- documentation requirements
- isolation, de-isolation and restoration techniques
- mechanical and electrical equipment isolation techniques

- mechanical and electrical isolation equipment types and characteristics
- permit to work system
- plant drawings, diagrams and manuals
- power generating plant and equipment, location and operating parameters
- power generating plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- tools, materials and resources
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS012 Conduct non-routine operational testing

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct testing of power generation plant and associated equipment which may be of a non-routine nature.

An operational check is the verification that a group of components are safely working together. Operational checks consist of running in-service electrical plant to ensure that all the systems function together.

Competency in this unit requires the ability to plan for plant in-service checks, carry out in-service electrical checks, carry out corrective actions and complete work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for testing	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Operational test requirements are identified in accordance with workplace procedures 1.3 Operational test procedures are determined, and monitoring equipment requirements are identified in accordance with testing objectives and workplace procedures 1.4 Access to power generating plant is determined in accordance with workplace procedures
2 Perform non-routine testing	2.1 Operational testing is performed in accordance with codes of practice, industry standards and workplace procedures 2.2 Isolations are confirmed in accordance with workplace procedures 2.3 Power generating plant is observed and corrective action is taken when response does not meet with operating parameters, plant integrity and personnel safety in accordance with workplace procedures 2.4 Operational testing is completed and power generating plant is returned to required operational status in accordance with workplace procedures
3 Complete work	3.1 Relevant personnel are notified of completion of testing in accordance with workplace procedures 3.2 Power generating plant problems or abnormalities are reported in accordance with workplace procedures 3.3 Operational test results are interpreted and documented in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS346 Conduct non-routine operational testing.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS012 Conduct non-routine operational testing

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- conducting non-routine operational testing using testing techniques and procedures
- identifying power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- locating power generating plant and equipment
- preparing for testing
- recognising abnormal power generating plant operating conditions
- restoring normal power generating plant operating conditions
- using testing equipment
- utilising data analysis techniques and tools
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- operational requirements of power generating plant and/or associated equipment
- permit to work system
- power generating plant and equipment, location and operating parameters

- power generating plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- testing techniques and procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS013 Conduct operational checks and carry out corrective action on in-service electrical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct operational checks and carry out corrective actions on in-service electrical plant.

An operational check is the verification that a group of components or units are working together to accomplish a single objective. An operational check consists of running in-service electrical plant to ensure that all the systems function together.

Competency in this unit requires the ability to plan for plant in-service checks, carry out in-service electrical checks, carry out corrective actions and complete work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan for plant in-service checks

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Electrical in-service plant status and work requirements are confirmed with relevant personnel and by site inspection in accordance with workplace procedures
- 1.4** Equipment is checked for correct calibration, operation and materials are obtained and inspected for compliance with job specification in accordance with workplace procedures
- 1.5** Potential hazards are identified, and risk control measures are selected in accordance with the workplace procedures
- 1.6** Pre-access checks of electrical in-service plant are carried out in accordance with workplace procedures

2 Carry out in-service electrical checks

- 2.1** Electrical in-service plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Electrical in-service plant checks are conducted and monitored to detect deviations from normal operation parameters in accordance with workplace procedures
- 2.3** Electrical in-service checks are performed in accordance with workplace procedures
- 2.4** Electrical in-service plant integrity and personnel safety are maintained in consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures

3 Carry out corrective actions

- 3.1** Corrective actions are identified after analysing electrical in-service plant operations in accordance with manufacturers' recommendations and specifications, and workplace procedures

- 3.2 Isolations are confirmed in accordance with workplace procedures
 - 3.3 Equipment for use in conducting operational checks is modified using relevant plans, drawings and manuals in accordance with workplace procedures
 - 3.4 Corrective actions are carried out on electrical in-service plant without damage and loss to other plant in accordance with workplace procedures
 - 3.5 Modified electrical in-service plant is set up to meet operational parameters in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 3.6 Final electrical in-service plant inspection is performed in accordance with workplace procedures
- 4 Complete work**
- 4.1 Operational checks and corrective actions are completed, and electrical in-service plant is returned to operational status in accordance with workplace procedures
 - 4.2 Relevant personnel are notified of work completion in accordance with workplace procedures
 - 4.3 Electrical in-service plant problems and corrective actions are reported in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry –Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS452 Conduct operational checks and carry out

corrective action on in-service electrical plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS013 Conduct operational checks and carry out corrective action on in-service electrical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEPUEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- carrying out in-service electrical checks
- communicating with personnel
- completing work
- determining and completing corrective actions using data analysis techniques and tools
- finalising documentation using recording procedures
- identifying electrical in-service plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting power generation plant drawings and manuals
- maintaining electrical in-service plant integrity
- performing isolations
- planning for electrical in-service plant checks
- preparing electrical in-service plant or equipment for operational check
- recognising abnormal electrical in-service plant operating conditions
- recognising remote indication of plant status and conditions
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- electrical in-service plant and equipment, location and operating parameters
- electrical in-service plant drawings
- electrical in-service plant status
- isolations
- manuals
- modification techniques
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS014 Conduct operational checks on in-service mechanical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct operational checks on in-service mechanical plant. Mechanical plant refers to the infrastructure used in the operation and maintenance of power generating facilities.

An operational check is the verification that a group of components are working together. An operational check consists of running in-service mechanical plant to ensure that all the systems function together safely.

Competency in this unit requires the ability to plan for plant in-service checks, carry out in-service mechanical checks and complete work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan for mechanical plant in-service checks

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** In-service mechanical plant status and work requirements are confirmed with relevant personnel and by site inspection in accordance with workplace procedures
- 1.4** Equipment is checked for correct calibration and operation and materials or components are obtained and inspected in accordance with workplace procedures
- 1.5** Potential hazards are identified, and risk control measures are selected in accordance with workplace procedures
- 1.6** Pre-access checks on in-service mechanical plant are carried out in accordance with workplace procedures

2 Carry out in-service mechanical plant check

- 2.1** In-service mechanical plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** In-service mechanical plant checks are monitored and observed to detect deviations from normal operation in accordance with workplace procedures,
- 2.3** Corrective actions are taken to rectify in-service mechanical plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4** In-service mechanical plant checks are performed in accordance with workplace procedures
- 2.5** In-service mechanical plant integrity and personnel safety are maintained in consultation with personnel and technical and operational documentation in accordance with workplace procedures

3 Complete work

- 3.1 In-service mechanical plant checks are completed and control measures are returned to required operational status in accordance with workplace procedures
- 3.2 Relevant personnel are notified of completion of work in accordance with workplace procedures
- 3.3 In-service mechanical plant problems and abnormalities are reported in accordance with workplace procedures
- 3.4 In-service mechanical plant results are interpreted and documented in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS352 Conduct operational checks on in-service mechanical plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS014 Conduct operational checks on in-service mechanical plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- assessing operation of power generating plant
- carrying out in-service mechanical plant check
- communicating with personnel
- completing work
- finding faults, including leaks and corrosion
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting of in-service mechanical plant equipment associated with electricity generating plant
- planning for in-service mechanical plant in-service check
- undertaking minor performance checking and testing
- utilising manuals
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- assessment of operation of electrical plant
- inspection of electrical plant equipment
- manuals
- minor performance checking and testing, including fault finding leaks and corrosion
- permit to work system

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS015 Conduct project management

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake project management plans and conduct project work.

Project management is the application of processes, methods, knowledge, skills and experience to achieving explicitly stated objectives. Project management includes initiating, planning, executing, controlling and closing projects in line with budget and timeframe constraints.

Competency in this unit requires the ability to plan and prepare, coordinate project plans and complete all documentation. Individuals will, in general, work as an operator with responsibility for project management, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Project management scope, outcomes, budget and timeline dates are identified in accordance with project

plan and workplace procedures

- 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3 Resources and stakeholders are identified, availability assessed and tasks allocated in accordance with project plan and workplace procedures
- 1.4 Preparation of technical specifications is conducted to meet project timeline dates in accordance with project plan and workplace procedures
- 1.5 Agreements with service providers and stakeholders are established in accordance with project plan and workplace procedures
- 1.6 Integrated overview plan is prepared and distributed for review by stakeholders in accordance with project plan and workplace procedures
- 1.7 Areas for potential overrun and resource complications are identified and are assessed for risks in accordance with project plan and workplace procedures
- 1.8 Documentation, materials and equipment required for the project are obtained in accordance with project plan and workplace procedures
- 1.9 Communication processes, including meetings, are organised to meet the needs of project stakeholders and service providers in accordance with project plan and workplace procedures

2 Coordinate project plan

- 2.1 Project management plan, including power generation plant isolation and access requirements, are coordinated in accordance with legislative requirements and workplace procedures
- 2.2 Specialist equipment and personnel are coordinated to achieve project management plan outcomes in accordance with project plan and workplace procedures
- 2.3 Project management plan progress and costs are reviewed against budget targets and baseline key performance indicators (KPIs) in accordance with

project plan and workplace procedures

- 2.4 Deviations from project management plan are identified and actions are taken to adjust project outcomes in accordance with project plan and workplace procedures
- 2.5 Deviations from project management plan requirements are reported to relevant stakeholders in accordance with project plan and workplace procedures
- 2.6 Project management plan is continuously reviewed in relation to workplace safety, quality control, resources, timeframes, costs and equipment in accordance with project plan and workplace procedures

3 Complete documentation

- 3.1 Power generation plant quality assurance documents and outage reports are provided in accordance with project plan and workplace procedures
- 3.2 Power generation plant and maintenance records are updated in accordance with project plan and workplace procedures
- 3.3 Power generation plant availability is declared on completion of project in accordance with project plan and workplace procedures
- 3.4 Project management plan performance and completion is reviewed and opportunities for improvement are documented in accordance with project plan and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS507 Conduct project management.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS015 Conduct project management

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with stakeholders
- completing documentation, including recording procedures
- coordinating project management plan, including contributing to project plan
- identifying conflict of power generating plant and project work requirements
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing timelines and resources, including human resource requirements and contractual procedures
- monitoring budget expenditure
- planning and preparing project using project management principles
- responding to project plan deviations
- using quality control procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- contractual obligations
- power generating plant and equipment, location and operating parameters
- project management planning principles, techniques and concepts
- project management work coordination
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- stakeholder management techniques, including liaising with contractors
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures, including:
 - quality control procedures
 - financial and contractual procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS016 Conduct routine wind turbine maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a range of routine maintenance functions associated with wind turbines. Routine maintenance functions associated with wind turbines are required to ensure the smooth operation of mechanical plant and equipment.

Competency in this unit requires the ability to plan for plant in-service checks, carry out in-service mechanical checks and complete work. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work

1.1

Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures

- 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
 - 1.3 Resources are obtained and inspected for compliance with job specification in accordance with workplace procedures
 - 1.4 Plans, drawings and manuals are selected in accordance with workplace procedures
 - 1.5 Correct size, type and quantity of materials and components are obtained and inspected in accordance with workplace procedures
 - 1.6 Work sequenced and prioritised in accordance with workplace procedures
 - 1.7 Potential hazards are identified, and risk control measures are selected in accordance with workplace procedures
 - 1.8 Work area is prepared in accordance with workplace procedures
- 2 **Conduct routine maintenance**
 - 2.1 Isolations are confirmed in accordance with workplace procedures
 - 2.2 Routine maintenance on wind turbine is conducted in accordance with workplace procedures
 - 2.3 Minor adjustments of wind turbine are undertaken in accordance with maintenance schedules and workplace procedures
 - 2.4 Wind turbine faults are reported to relevant personnel in accordance with workplace procedures
- 3 **Complete work**
 - 3.1 Maintenance work is completed and relevant personnel are notified in accordance with workplace procedures
 - 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
 - 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures

- 3.4** Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS251 Conduct routine wind turbine maintenance.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS016 Conduct routine wind turbine maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- acquiring and analysing information related to wind turbine maintenance
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- maintaining and retrieving records
- performing isolations
- planning and preparing for work, including identifying and selecting materials
- storing and maintaining tools and equipment
- utilising routine wind turbine maintenance techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- acquiring and analysing wind turbine information
- arrangements of wind farm power plant
- equipment and materials required for maintenance work
- isolations
- maintenance and retrieval of records

- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- routine wind turbine maintenance techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- wind farm principles, including wind turbine types and characteristics
- wind turbine plant and equipment, location and operating parameters
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS017 Conduct single energy source isolation procedures for permit to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct single energy source isolation procedures for permits to work.

A permit to work system is a formal method used to control certain types of work that can be potentially hazardous. A permit to work specifies the work to be completed, the precautions to be taken and the timeframe for completion.

Competency in this unit requires the ability to plan and prepare for isolation, de-isolation and restoration, perform isolation and perform de-isolation and restoration. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for single energy source isolation	1.1 Work requirements, including permits to work, are identified from relevant personnel and site inspection in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Materials, tools, equipment and resources are obtained and inspected in accordance with workplace procedures 1.4 Isolation work is sequenced in accordance with permit requirements and workplace procedures 1.5 Isolation work is prioritised in accordance with permit requirements and workplace procedures 1.6 Permit to work is coordinated with other personnel involved in, and affected by isolations in accordance with workplace procedures 1.7 Personnel participating in work are briefed, with roles and responsibilities confirmed, in accordance with workplace procedures
2 Perform single energy source isolation	2.1 Single energy source to be isolated is identified in accordance with workplace procedures 2.2 Isolation is performed in accordance with permit requirements and workplace procedures 2.3 Isolation, dissipation and restraint of energy sources is verified in accordance with workplace procedures 2.4 Isolation is confirmed in accordance with workplace procedures
3 Perform single energy source de-isolation and restoration	3.1 Single energy source de-isolation and restorations are performed in accordance with permit requirements and workplace procedures 3.2 Single energy source de-isolations are confirmed in accordance with workplace procedures 3.3 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS301 Conduct single energy source isolation procedures for permit to work.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS017 Conduct single energy source isolation procedures for permit to work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing de-isolations and restorations
- completing documentation
- coordinating and briefing others on permit to work
- identifying power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting power generation plant and equipment diagrams
- obtaining authorisation for single energy source isolation
- performing isolations, de-isolations and restorations
- planning and preparing for isolation, de-isolation and restoration
- preparing power generating plant or equipment for isolation operation
- using permit to work system
- utilising isolations, including lock and tag systems
- working with equipment, tools, materials and resources.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- documentation requirements
- equipment, tools, materials and resources for use
- lock and tag system
- manuals
- permit to work system
- power generating plant and equipment, location and operating parameters
- power generating plant status
- power generation plant and equipment drawings and diagrams
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- single energy source isolations, mechanical isolations, de-isolations and restorations methods and techniques
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS018 Conduct water conveyance and control

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the operation of storage, conveyance and control systems of hydro generation water supplies.

Water storage, conveyance and control systems can include dams, canals, pipelines, tunnels and related hydraulic components and structures.

Competency in this unit requires the ability to plan work, supply water for power generation, implement flood control procedures and complete all documentation. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

- of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures
 - 1.3 Resources are identified and obtained in accordance with workplace procedures
 - 1.4 Potential hazards are identified, and risk control measures are selected in accordance with workplace procedures
 - 1.5 Storage, conveyance and control hydro system work is sequenced and prioritised in accordance with workplace procedures
- 2 Supply water for power generation**
- 2.1 Inspections of hydro storage and conveyance systems are scheduled, and problems are reported and monitored, in accordance with workplace procedures
 - 2.2 Water quality is monitored and recorded in accordance with workplace procedures
 - 2.3 Water flow regulating systems are monitored and adjusted to meet power generation needs and other user requirements in accordance with workplace procedures
 - 2.4 Water flow diversions are determined to facilitate maintenance and emergency activities in accordance with workplace procedures
 - 2.5 Dam surveillance procedures are performed in accordance with workplace procedures
 - 2.6 Dam levels are maintained and monitored to power generation system requirements in accordance with workplace procedures
 - 2.7 Functional tests of equipment are undertaken in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3 Implement flood control procedures**
- 3.1 Potential flood conditions are determined using data collected and reports communicated in accordance with workplace procedures

- 3.2** Flood control procedures are implemented in accordance with workplace procedures
 - 3.3** Flood control outcomes are monitored, recorded and reported to relevant personnel and are reviewed in accordance with workplace procedures
- 4 Complete documentation**
 - 4.1** Equipment problems, movements and status are reported in accordance with workplace procedures
 - 4.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS344 Conduct water conveyance and control.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS018 Conduct water conveyance and control

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using documenting, reporting and recording procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- managing water supplies for hydro power generation
- planning and preparing for work
- responding to abnormal storage, conveyance and control hydro system operating conditions
- using flood control
- utilising testing and diagnostic techniques
- working with water control systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydro power production plant
- hydro equipment operation, including capacity and limitations
- hydro power generating plant and equipment, location and operating parameters
- hydroelectric generation, including hydro turbine, hydro turbine governor and hydro generator types and characteristics
- implementation of flood control
- manuals

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- water control systems
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS019 Control electrical energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to control the safe operation of energy production to meet demand on an electricity generating unit.

Generating units usually operate independently, with most power generation production facilities consisting of several independent generating units which can be brought online or taken offline as demand fluctuates.

Competency in this unit requires the ability to plan for power generating plant operation, operate generator and excitation system, control generation of electrical energy and the completion of work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for plant operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational check on electrical energy production plant is carried out in accordance with workplace procedures
2 Operate generator and excitation system	2.1 Generator and excitation system is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Synchronising requirements are assessed, evaluated and achieved to ensure generator and excitation system stability in accordance with workplace procedures
	2.3 Generator and excitation system is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify generator and excitation system abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Control generation of electrical energy	3.1 Generator output is adjusted to meet demand in accordance with workplace procedures
	3.2 Reactive power generation and voltage regulation requirements are assessed and the generator and excitation system are controlled to achieve output in accordance with workplace procedures
	3.3 Generator stabilities and operating limits are assessed and the generator and excitation system are controlled to maintain those limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
	3.4 Generator cooling systems and limits are monitored and assessed and the generator and excitation system are controlled to maintain those limits in accordance with

manufacturers' recommendations and specifications and workplace procedures

- 4 Complete documentation**
- 4.1** Power generating plant problems, movements and status are reported in accordance with workplace procedures
 - 4.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS457 Control electrical energy production.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS019 Control electrical energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing electrical energy production plant faults using diagnostic and testing techniques
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- completing documentation
- controlling generation of electrical energy production
- directing the operation of interacting systems, electrical energy production plant and equipment
- identifying electrical energy production plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- maintaining generator unit integrity
- monitoring electrical energy production unit operations
- operating generator and excitation system
- organising resources
- planning for electrical energy production plant operation
- reviewing electrical energy production plant operation using data analysis techniques and tools
- undertaking corrective actions.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- analysis of electrical energy production plant faults

- arrangements of power generating production plant
- control of electrical energy generation production
- electrical energy production plant and equipment, location and operating parameters
- electrical energy production plant operation monitoring
- electrical energy production unit operations
- generator and system stability, including system components and interactions
- generator excitation and cooling system types and characteristics
- manuals
- operation of generator and excitation systems
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS020 Control hydro generation pumping

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the control of hydro generation pumping through remote control of hydro generating plant.

Hydro pumping is a system for generating hydroelectric power for peak periods. This is performed by pumping water from a lower to a higher reservoir during low demand periods and then releasing it during peak periods.

Competency in this unit requires the ability to maintain key indicator limits, operate remote hydro plant, maintain policies and procedures and complete work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Maintain key indicator limits	1.1	Pond levels, power station discharges, plant voltage and current limits, frequency and time errors are maintained in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.2	Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3	Hydro generation plant is run at peak efficiency, to the load schedule, avoiding rough running zones, in accordance with workplace procedures
2 Operate remote hydro plant	2.1	Hydro generation power plant is remotely stopped, started, loaded and unloaded in accordance with the electricity generation schedule and workplace procedures
	2.2	Power generating plant is remotely switched in and out of synchronous condenser operation in accordance with workplace procedures
3 Maintain policies and procedures	3.1	Communication procedures are used to alert public of increased river flows in accordance with workplace procedures
	3.2	Minimum river flows are maintained and agreed limits set in accordance with workplace procedures
	3.3	Water storage levels are monitored and maintained in accordance with legislative requirements and workplace procedures
4 Complete documentation	4.1	Equipment problems, movements and status are reported in accordance with workplace procedures
	4.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS514 Control hydro generation pumping.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS020 Control hydro generation pumping

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating dam and river levels to public
- completing documentation using recording procedures
- determining remote indication of hydro plant status and condition
- identifying hydro power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- interpreting manuals
- maintaining policies and procedures
- operating remote hydro plant within design parameters
- preserving hydro generation pumping key indicator limits
- recognising abnormal hydro plant operating conditions and determining corrective actions

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydro power production plant, including:
- dam types and characteristics
- hydro generator types and characteristics
- hydro power generating equipment status
- hydro turbine types and characteristics, including hydro turbine governors
- communication required by public and stakeholders about dam or river levels

- hydro power generating plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- manuals
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS021 Control permit to work operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform work in association with a permit system.

Permits to work are a formal system used to control high-risk activities in power generation facilities. They specify the control measures to be used. Permits ensure that all hazards and precautions have been considered before any hazardous work begins.

Competency in this unit requires the ability to plan and prepare for permit to work procedures, perform permit duties and complete work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for permit to work procedures	1.1 Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures
	1.2 Information and documentation related to controlling permit to work requirements is obtained in accordance with workplace procedures
	1.3 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.4 Power generation plant is identified in accordance with workplace procedures
	1.5 Consultation with key stakeholders to identify state of power generation plant, isolations and maintenance timetable is confirmed in accordance with workplace procedures
2 Perform permit duties	2.1 Permit is obtained and work requirements is confirmed in accordance with workplace procedures
	2.2 Isolations, barriers and taggings are confirmed in accordance with permit requirements and workplace procedures
	2.3 Permit requirements are clarified to personnel involved in and affected by work in accordance with workplace procedures
	2.4 Personnel involved in work tasks are signed on to permits prior to commencement of work in accordance with workplace procedures
	2.5 Permit conditions are monitored and controlled throughout work sequence in accordance with workplace procedures
3 Complete work	3.1 Power generation plant is inspected and returned to normal operation in accordance with workplace procedures
	3.2 Staff signed on to permit are signed off in accordance with workplace procedures

- 3.3** Work is completed and relevant personnel are notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS430 Control permit to work operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS021 Control permit to work operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and key stakeholders
- completing work
- controlling permit to work system, including safety procedures
- identifying power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- locating power generating plant and equipment
- performing permit to work duties and procedures
- planning and preparing to use permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- manuals
- mechanical and electrical equipment isolation techniques
- mechanical and electrical isolation equipment types and characteristics
- permit to work system and implementation
- power generating plant and equipment
- arrangements of power production plant

- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures, including safety procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS022 Coordinate and direct switching program

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate and direct resources for a switching program.

An electrical switch can alternate a load between two sources either manually or automatically when sensors detect one of the sources has lost or gained power. A switch is installed where the backup generator is located so that the generator can be used to provide temporary electrical power, as required.

Competency in this unit requires the ability to prepare for a switching program, coordinate and direct a switching program, maintain dynamic integrity of power generation system and complete all documentation. Individuals will, in general, work as a switching program coordinator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS124 Perform switching to a switching program

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for switching program

- 1.1** Qualifications and authorisations of personnel performing switching operations are established in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Contingency plan is evaluated and discussed with key stakeholders and relevant amendments are relayed to relevant personnel in accordance with workplace procedures
- 1.4** Permit and access requirements are established prior to switching program commencement in accordance with workplace procedures
- 1.5** Documentation is distributed to relevant personnel prior to switching program commencement in accordance with workplace procedures,

2 Direct switching program

- 2.1** Personnel are advised of switching program and directed to locations in accordance with workplace procedures
- 2.2** Communication is established with key stakeholders and personnel and is maintained throughout duration of switching program in accordance with workplace procedures
- 2.3** Network system schematic diagram, or equivalent, is updated as switching program proceeds in accordance with workplace procedures,
- 2.4** Access to power generation plant is controlled in accordance with workplace procedures
- 2.5** Work groups are coordinated and directed throughout switching program in accordance with workplace procedures
- 2.6** Permits issued are monitored and recorded in accordance with workplace procedures

	2.7	Switching program is controlled to ensure outage coincides with planned timetable in accordance with workplace procedures,
3 Maintain dynamic integrity of system	3.1	Switching program steps are verified before and after each operation in accordance with workplace procedures
	3.2	Switching program steps are recorded on successful completion of each operation in accordance with workplace procedures
	3.3	Network system conditions or stability is constantly monitored in accordance with workplace procedures
	3.4	Alternative switching program steps are developed for unexpected problems in accordance with workplace procedures
4 Complete documentation	4.1	Equipment problems and status are reported in accordance with workplace procedures
	4.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS525 Coordinate and direct switching program.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS022 Coordinate and direct switching program

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- coordinating and directing switching programs
- identifying power generation plant status, including:
 - monitoring network system integrity and stability
 - analysing system operational information
 - recognising abnormal power generating plant and network system operating conditions
 - determining corrective actions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting power generation plant drawings and network system diagrams
- liaising with stakeholders
- maintaining dynamic integrity of power generation system
- preparing for switching program
- using manuals
- utilising contingency plans
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- arrangements of power production plant, including:
- corrective actions
- power generation plant and equipment, location and operating parameters
- power generation plant status
- switchgear types and characteristics
- systems network
- contingency plans
- coordination and direction of switching programs
- permit to work system
- plant drawings, network system diagrams, and manuals
- power generation network system diagrams
- power generation system integrity and stability monitoring processes and procedures
- preparations for switching programs
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- stakeholder liaison
- switching operation processes and procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications,

regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS023 Coordinate electrical energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the safe and effective management of energy production to meet demand on an electricity generating unit.

Power utilities match demand and supply through adjusting the production rate of power generating facilities. This is achieved by taking generating units online and offline or through importing power from other utilities.

Competency in this unit requires the ability to coordinate unit operations, monitor network system and power generating plant, analyse network system and power generating plant faults and complete all documentation. Individuals will, in general, work as an operator with responsibility for coordinating electrical energy production, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS019 Control electrical energy production

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Coordinate unit operations

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Electricity generating unit is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 1.3** Causes of abnormal operating conditions in electricity generating unit is identified by analysing technical and operational information in accordance with workplace procedures
- 1.4** Corrective actions are taken to rectify electricity generating unit abnormalities in accordance with workplace procedures
- 1.5** Electricity generating unit's integrity, personnel safety and continuity of supply are maintained in accordance with workplace procedures
- 1.6.** Consultation with relevant personnel is undertaken in accordance with workplace procedures
- 1.7** Electricity generating unit is operated at efficiency in accordance with workplace procedures

2 Monitor unit and plant

- 2.1** Electricity generating unit and power generating plant to be monitored are physically identified in accordance with workplace procedures
- 2.2** Electricity generating unit and power generating plant are monitored for normal operation and to detect deviations in accordance with workplace procedures
- 2.3** Relevant personnel are notified when defects and abnormal operating conditions in electricity generating unit and power generating plant are detected in accordance with workplace procedures,

3 Test unit and plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Electricity generating unit and power generating plant are observed for operational response in accordance with

		workplace procedures
	3.3	Electricity generating unit and power generating plant are returned to operational status on completion of testing in accordance with workplace procedures
4 Analyse unit and plant faults	4.1	Causes of abnormal electricity generating unit operating conditions are identified by analysing technical and operational information in accordance with workplace procedures,
	4.2	Electricity generating unit and power generating plant integrity and personnel safety are maintained in consultation with personnel, technical and operational documentation, in accordance with workplace procedures
	4.3	Relevant personnel, including specialists, are arranged for investigation of identified operational abnormalities in accordance with workplace procedures
5 Complete documentation	5.1	Electricity generating unit and power generation plant problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS526 Coordinate electrical energy production.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS023 Coordinate electrical energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing electricity generating unit and generating power plant faults using data
- analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- coordinating electricity generating unit operations
- coordinating power generation, including:
 - controlling electricity generating unit systems energy generation
 - maintaining generator unit integrity
 - monitoring power generating plant and equipment operations
 - preparing power generation plant and equipment for operation
 - recognising power generation plant status
- identifying and responding to abnormal electricity generating unit system and power generating plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring electricity generating unit and power generating plant
- testing electricity generating unit and power generating plant operations using diagnostic and testing techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- analysis of electricity generating unit and power generating plant faults
- arrangements of power production plant
- control of electricity generating unit energy generation
- coordination of electricity generating unit operations
- electricity generating unit and power generating plant components and interactions
- generator and electricity generating unit stability
- manuals
- electricity generating unit and power generating plant operation monitoring
- power generating plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS024 Coordinate first response team operation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package. Release 2.0

Application

This unit involves the skills and knowledge required to coordinate the operations of a first response team. Coordinators will organise workplace emergency response procedures and communicate with external emergency agencies.

A first response team prepares for and responds to emergency incidents that pose an immediate risk to a power generation facility. The operation of a first response team is to support emergency service agencies.

Competency in this unit requires the ability to coordinate a workplace emergency team, cooperate with other emergency services personnel, evaluate an emergency, respond to an emergency and to report the outcomes of an emergency response. Individuals will, in general, work as an operator, with coordination responsibilities, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Coordinate workplace first response team

- 1.1** First response team purpose is identified from relevant personnel and documentation in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Duties and responsibilities of first response team members are identified in accordance with workplace procedures
- 1.4** Instructions are relayed to first response team members in accordance with workplace procedures
- 1.5** First response team member identification is displayed in accordance with workplace procedures

2 Cooperate with emergency services personnel

- 2.1** Responsibilities of emergency services personnel are clarified to first response team members in accordance with workplace procedures
- 2.2** Role and authority of emergency services is discussed with first response team members in accordance with workplace procedures
- 2.3** Instructions from emergency services personnel are clarified and coordinated in accordance with workplace procedures
- 2.4** Guidance and assistance for emergency services personnel is coordinated in accordance with workplace procedures
- 2.5** Directions and advice are given to emergency service personnel and first response team members, after emergency site inspection, in accordance with workplace procedures
- 2.6** An emergency plan to ensure personnel safety and power generating plant integrity is developed in accordance with legislative requirements and workplace procedures

- 2.7 Relevant documentation is obtained and used in accordance with workplace procedures
 - 2.8 Materials, equipment and resources are obtained and coordinated in accordance with workplace procedures
- 3 Evaluate emergency**
 - 3.1 Nature, extent and cause of emergency is identified, in accordance with workplace procedures
 - 3.2 Potential risks to personnel, equipment, environment and power generation production are identified in accordance with workplace procedures
 - 3.3 Notification of emergency is undertaken in accordance with workplace procedures
 - 3.4 Emergency evacuation procedures are followed in accordance with workplace procedures
 - 3.5 Requirement for special expert assistance is identified in accordance with workplace procedures
 - 3.6 Emergency incident is evaluated in accordance with workplace procedures, to prevent repetition
 - 3.7 Location of emergency is identified, and most effective route is determined in accordance with workplace procedures
- 4 Respond to emergency**
 - 4.1 Vehicles and buildings are secured and protected in accordance with emergency plan requirements and workplace procedures
 - 4.2 Potential sources of danger are isolated, and warning signs, signals and barriers are put in place in accordance with workplace procedures
 - 4.3 Emergency incident responses are applied in accordance with emergency plan requirements and workplace procedures
 - 4.4 Communication is established with key stakeholders and emergency services personnel in accordance with workplace procedures
 - 4.5 Use of personal protective equipment (PPE) during emergency incident is monitored in accordance with workplace procedures

	4.6	Technical advice to emergency service personnel is given in accordance with workplace procedures
5 Report outcomes of emergency response	5.1	Fire and emergency equipment is marked and positioned after use to indicate servicing or replacing in accordance with workplace procedures
	5.2	Use of emergency equipment is reported in accordance with workplace procedures
	5.3	Debriefing is attended and responded to in accordance with workplace procedures
	5.4	First response team outcomes are evaluated, and recommendations are submitted for consideration in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS404 Coordinate first response team operation.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS024 Coordinate first response team operation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying emergency and evacuation techniques and procedures
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - risk control measures
 - safe working practices
 - personal protective equipment (PPE)
- classifying fires and emergencies
- communicating with personnel and external organisations and agencies during an emergency
- cooperating with emergency services personnel
- coordinating workplace first response team
- evaluating emergency incidents
- evaluating first response plans and team outcomes
- identifying potential hazards
- identifying roles and responsibilities, including teamwork
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- locating power generating plant and equipment
- preparing first responder emergency equipment for operation
- reporting outcomes of first response team
- responding to emergency incidents
- utilising emergency plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- classification of fires and emergencies

- communication with personnel and external agencies
- emergency plans
- emergency responses
- equipment for first response tasks, including emergency warning signs
- evaluation of outcomes
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- power generating plant and equipment, location and operating parameters
- power generating plant status
- role and responsibilities of emergency services
- role of the first response team and its members
- WHS/OHS requirements, including:
 - risk control measures
 - safe working practices
 - Personal Protective Equipment (PPE)
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS025 Coordinate local H.V. networks

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the control and management of high voltage (H.V.) substations or local networks.

H.V. substations are a node point in power generation infrastructure. They transform voltage from high to low, or the reverse, and enable the reliable transmission of large amounts of power.

Competency in this unit requires the ability to plan and prepare work; operate, monitor and control H.V. substation and local network; analyse and respond to H.V. substation or local network faults or incidents; review incident response and preventative procedures and complete all documentation. Individuals will, in general, work as an operator with responsibility for H.V. network coordination, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Documentation to determine H.V. substation or local network status is assessed and evaluated in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** H.V. substation or local network equipment operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.4** Sequence for operating local network section and equipment is determined in accordance with workplace procedures
- 1.5** Information to forecast and plan response for efficient operation of H.V substation or local network is utilised in accordance with workplace procedures
- 1.6** Regular consultation with key stakeholders is maintained in accordance with workplace procedures
- 1.7** Implications of operator's actions to H.V substation or local network are identified and assessed in accordance with workplace procedures

2 Operate, monitor and control H.V. substation or local network

- 2.1** Local network is operated and coordinated in accordance with workplace procedures
- 2.2** Local network voltage and current requirements are assessed and evaluated to maintain stability and system integrity in accordance with workplace procedures
- 2.3** Voltage and load profiles are identified in accordance with workplace procedures
- 2.4** Corrective actions to rectify H.V. substation or local network abnormalities are implemented following analysis of data in accordance with manufacturers' recommendations and specifications, and workplace procedures

	2.5	Resources are identified and coordinated to meet H.V. substation or local network system requirements in accordance with workplace procedures
3 Analyse and respond to H.V. substation or local network faults	3.1	Cause of H.V. substation or local network fault conditions are identified by analysing technical and operational information in consultation with system control personnel in accordance with workplace procedures
	3.2	Operation of protection systems for H.V. substation or local network is identified and assessed to evaluate nature and cause of fault conditions in accordance with workplace procedures,
	3.3	Communication is established with key stakeholders to identify nature or source of H.V. substation or local network system interference in accordance with workplace procedures
	3.4	Corrective action is taken in accordance with workplace procedures
	3.5	Local system integrity and personnel safety are maintained through consultation with relevant personnel, operational documentation and contingency plans in accordance with workplace procedures
4 Review incident response and preventative procedures	4.1	Incident or fault responses are assessed and reviewed in accordance with workplace procedures
	4.2	Alternative responses or contingency plan strategies are identified and assessed in accordance with workplace procedures
	4.3	Alternative responses or contingency plan strategies are documented in accordance with workplace procedures
5 Complete documentation	5.1	H.V. substation or local network problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS424 Coordinate local H.V. networks.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS025 Coordinate local H.V. networks

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing and responding to high voltage (H.V.) substation and local network faults or incidents
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with key stakeholders
- communicating with personnel and external agencies
- completing documentation using recording procedures
- identifying power generation plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- operating, monitoring and controlling local H.V. substation and local network
- preparing for H.V. network system operations
- recognising and responding to abnormal H.V. substations and local network operating conditions using data analysis techniques and tools
- reviewing incident response and preventative procedures
- using contingency plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- abnormal operating conditions in H.V substations and local networks
- arrangements of power production plant
- contingency plans

- coordination of H.V substations and local networks
- H.V substations and local network types and characteristics
- manuals
- power generating plant and equipment, location and operating parameters
- power generating plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS026 Coordinate network/system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the coordination of a network and/or system. Networks and/or systems may be interconnected, remote or isolated.

Power generation operators will manage varying levels of network and/or system complexity across facilities, as well as the networks and/or systems that exist within an individual facility's plant and equipment.

Competency in this unit requires the ability to plan network and/or system operations, coordinate network and/or system, respond to network and/or system faults or incidents and complete all documentation. Individuals will, in general, work as an operator with coordination responsibilities in network and/or system control in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare network/system operations

- 1.1** Information and documentation are identified, assessed and evaluated in accordance with network and/or system requirements and workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Network and/or system and associated equipment operational prerequisites are determined in accordance with workplace procedures
- 1.4** Work priorities are determined to suit network and/or system circumstances in accordance with workplace procedures
- 1.5** Network and/or system limitations and performance are identified in accordance with workplace procedures

2 Coordinate network/system

- 2.1** Network and/or system is operated in accordance with workplace procedures
- 2.2** Network and/or system demand is monitored to ensure the quality of supply and to maintain stability and system integrity in accordance with workplace procedures
- 2.3** Network and/or system load shedding sequence and priorities are monitored in accordance with workplace procedures
- 2.4** Network and/or system corrective actions to rectify deviations are implemented following analysis of data in accordance with workplace procedures
- 2.5** Resources to meet network and/or system requirements are identified and coordinated in accordance with workplace procedures
- 2.6** Network and/or system operations are carried out in consultation with team members in accordance with workplace procedures

3 Respond to network/system faults

- 3.1** Causes of abnormal network and/or system operating conditions are identified in accordance with workplace

- procedures and technical and operational information
- 3.2 Operation of protection for network and/or system is identified and assessed to evaluate the nature and cause of fault conditions in accordance with workplace procedures,
 - 3.3 Communication is established with key stakeholders to identify the nature and source of network system interference in accordance with workplace procedures
 - 3.4 Corrective action is taken in accordance with workplace procedures
 - 3.5 Network and/or system integrity and safety are maintained with personnel, technical and operational documentation, including contingency plans, in accordance with workplace procedures
- 4 Complete documentation**
- 4.1 Network and/or system problems, movements and status is reported in accordance with workplace procedures
 - 4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS420 Coordinate network/system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS026 Coordinate network/system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with external agencies
- communicating with personnel
- completing documentation using recording procedures
- coordinating and controlling network and/or system to maintain power generating plant integrity
- coordinating personnel
- diagnosing continuity of supply for efficiency
- identifying power generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- applying workplace procedures
- interpreting plant drawings and manuals
- planning and preparing network and/or system operations
- recognising and responding to network system faults and abnormal operating conditions
- selecting appropriate load shedding
- using contingency plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- coordination of a network and/or system operation

- network and/or system types and characteristics
- plant drawings and manuals
- power generating plant and equipment, location and operating parameters
- power generating plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS027 Coordinate operational strategies for power production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required coordinate operational strategies to achieve short- and long-term goals of a power generation facility's production plant.

An operational plan describes how a power generation facility will use resources within specified timeframes. Operational strategies are the methods used to reach objectives and performance targets related to the power generation facility's operational plan.

Competency in this unit requires the ability to coordinate the implementation of operational strategies, monitor strategies and report on performance against strategies. Individuals will, in general, work as a coordinator in operational management, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Coordinate implementation of operational strategies	1.1 Power generating plant operational plan and strategies are identified and implemented in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Power generating plant operations and condition is monitored and reported on in accordance with workplace procedures 1.4 Resources and supplies are coordinated to meet operational plan and strategy requirements in accordance with workplace procedures 1.5 Authorising personnel are informed about implementation strategies in accordance with workplace procedures
2 Monitor strategies	2.1 Deviations from operational plan and strategies are identified and recorded in accordance with workplace procedures 2.2 Impact on operational strategies is identified and reviewed in accordance with workplace procedures 2.3 Operational strategies are monitored in accordance with workplace procedures
3 Report performance against strategies	3.1 Data is collected on operational strategy implementation and is processed for review in accordance with workplace procedures 3.2 Abnormal conditions that impact operational strategy implementation are reported in accordance with workplace procedures 3.3 Changes to operational strategies are documented and referred to relevant personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS413 Coordinate operational strategies for power production.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS027 Coordinate operational strategies for power production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
- using operational plans
- emergency procedures
- risk control measures
- safe working practices
- communicating with personnel
- coordinating implementation of operational strategies
- evaluating operational strategy implementation using data analysis techniques and tools
- identifying power generation plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting plant drawings and manuals
- monitoring operational strategies
- power generation plant, systems and operating parameters
- reporting on operational strategies.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- coordination of operational strategies
- data collection and analysis techniques
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:

- emergency procedures
- risk control measures
- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS028 Coordinate permit to work system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the permit to work system in a power generation facility inclusive of implementation and application on a day-to-day basis, during major power outages and in other projects.

Permits to work are a formal system used to control high-risk activities in power generation facilities. They specify control measures to be used. Permits to work ensure that all hazards and precautions have been considered before any hazardous work begins.

Competency in this unit requires the ability to plan implementation of permit to work procedures, coordination of power outage permit to work requirements and coordination of the permit to work system. Individuals will, in general, work as a coordinator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS011 Conduct multiple energy source isolation procedures for permit to work

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Implement permit to work procedures

- 1.1** Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Power generation plant isolations are coordinated and confirmed with relevant personnel in accordance with workplace procedures
- 1.4** Issue, cancellation and recording of permits to work is carried out in accordance with workplace procedures
- 1.5** Power generation plant de-isolation and restoration is coordinated with relevant personnel in accordance with workplace procedures
- 1.6** Documentation is completed in accordance with workplace procedures

2 Coordinate permit to work requirements

- 2.1** Power outage plan is obtained from and confirmed with relevant personnel in accordance with workplace procedures
- 2.2** Critical paths, major milestones and potential conflicts between permits to work for power outage work are identified and assessed in accordance with workplace procedures
- 2.3** Permits to work are detailed in maintenance plan and work is structured to not impact power outage targets in accordance with workplace procedures
- 2.4** Resources are obtained and utilised to ensure power outage plan targets are maintained in accordance with workplace procedures,
- 2.5** Issue and cancellation of permits to work is coordinated in accordance with workplace procedures
- 2.6** De-isolation and restoration of power generation plant is planned and coordinated to meet recommissioning

		targets in accordance with workplace procedures
	2.7	Records are maintained during power outages in accordance with workplace procedures
3 Report on permit to work system	3.1	Permit to work system is monitored, reviewed and results are evaluated in accordance with workplace procedures
	3.2	Results are documented and reports are confirmed with relevant personnel in accordance with workplace procedures
	3.3	Permit to work system incidents are identified in accordance with workplace procedures
	3.4	Permit to work incidents are investigated and assessed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS403 Coordinate permit to work system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS028 Coordinate permit to work system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- coordinating power outage permit to work requirements
- coordinating the permit to work system by utilising planning principles and techniques
- evaluating permit to work system using data analysis techniques and tools
- identifying power generating plant status, including locating power generating plant and equipment
- identifying power outage requirements
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- reporting on permit to work system
- using mechanical equipment isolation techniques
- using permit to work procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- coordination of permit to work systems
- evaluation and analysis techniques
- manuals
- mechanical and electrical equipment isolation techniques

- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS029 Coordinate photovoltaic solar power plant operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the coordination of photovoltaic (PV) solar power plant operations.

A PV solar power plant operation consists of a large-scale PV system designed for the supply of power into the electricity grid. The solar power source is via PV modules that convert light directly to electricity.

Competency in this unit requires the ability to coordinate plant operations, monitor plant operations, test plant operations, analyse plant faults and report operation against strategy requirements. Individuals will, in general, work as an operator with responsibility for PV solar power plant coordination, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Coordinate plant operations

- 1.1** PV solar power plant operational procedures are implemented in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Resources and supplies are coordinated to meet PV solar power plant requirements in accordance with workplace procedures

2 Monitor plant operations

- 2.1** Deviations from PV solar power plant operations are identified and recorded in accordance with workplace procedures
- 2.2** PV solar power plant operation and condition is monitored in accordance with legislative requirements and workplace procedures
- 2.3** Requirements that may impact on PV solar power plant operations are monitored in accordance with workplace procedures
- 2.4** PV solar power plant operations are monitored in accordance with workplace procedures

3 Test plant operation

- 3.1** Operational tests are performed on PV solar power plant in accordance with workplace procedures
- 3.2** PV solar power plant is observed for operational response in accordance with workplace procedures
- 3.3** PV solar power plant is returned to required operational status upon completion of testing in accordance with workplace procedures

4 Analyse plant faults

- 4.1** Causes of abnormal PV solar power plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures,
- 4.2** Corrective actions to rectify faults are determined in accordance with workplace procedures

- 4.3 PV solar power plant integrity and personnel safety are maintained through consultation with personnel, and technical and operational documentation in accordance with workplace procedures, and
 - 4.4 Relevant personnel, including specialists, are arranged for investigation of identified PV solar power plant operational abnormalities in accordance with workplace procedures
- 5 **Report operation against strategy requirements**
 - 5.1 Data is collected and processed for review in accordance with operational strategy and workplace procedures
 - 5.2 PV solar power plant operation or condition is reported in accordance with legislative requirements and workplace procedures
 - 5.3 Abnormal PV solar power plant operating conditions are reported in accordance with workplace procedures
 - 5.4 Changes to operational strategy are coordinated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS447 Coordinate photovoltaic solar power plant operations.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS029 Coordinate photovoltaic solar power plant operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing photovoltaic (PV) solar power plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- coordinating operational strategies
- coordinating PV solar power plant operations
- identifying PV solar power plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring PV solar power plant operations
- reporting operations against operational strategy requirements using recording procedures
- testing PV solar power plant operation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of PV solar power plants
- coordination of operational strategies
- data collection and recording techniques
- manuals
- measurement and analysis systems and procedures
- PV solar power plant and equipment, location and operating parameters

- PV solar power plant efficiency including performance and reliability targets
- PV solar power plant generation and systems
- PV solar power plant operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS030 Coordinate power generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the operation and control of multiple power generators sharing load under the control of one operator.

Operators are responsible for starting and stopping power generators. Depending on need, this includes synchronising and adjusting voltage output, troubleshooting, fixing problems and responding to emergencies.

Competency in this unit requires the ability to plan for power generating plant operations, operate power generator and excitation system, control generation of electrical energy, coordinate generation control, monitor system and power generating plant and the completion of all documentation. Individuals will, in general, work as an operator with responsibility for coordinating power generation, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for plant operation

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Preoperational checks of power generation plant operations are carried out in accordance with workplace procedures

2 Operate generator and excitation system

- 2.1** Generator and excitation system are operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Synchronising requirements are assessed and evaluated to ensure generator and excitation system stability in accordance with workplace procedures
- 2.3** Generator and excitation system are monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.4** Corrective actions are taken to rectify generator and excitation system abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Control generation of electrical energy

- 3.1** Power generator output is adjusted to meet electricity demand in accordance with operating requirements and workplace procedures

- 3.2 Reactive power generation and voltage regulation requirements are assessed, and excitation system is controlled to achieve output in accordance with workplace procedures
 - 3.3 Generator stabilities and operating limits are assessed, and excitation system is controlled to maintain limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 3.4 Generator cooling systems and limits are monitored and assessed, and excitation system is controlled to maintain limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 4 **Coordinate generation control**
 - 4.1 Load sharing between multiple generators is controlled to maintain efficiency and power generating plant reliability in accordance with workplace procedures
 - 4.2 Output of generators is adjusted to meet electricity demand in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.3 Generator, excitation system and power generating plant key indicators are monitored and adjusted to maintain limits and detect deviations from normal operating conditions in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.4 Generator and excitation system integrity and continuity of supply are maintained in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.5 Consultation with relevant personnel is undertaken in accordance with workplace procedures

- 4.6** Generator and excitation system are operated efficiently in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 5 Monitor system and plant**
- 5.1** Generator and excitation system or power generating plant to be monitored are physically identified in accordance with workplace procedures
- 5.2** Generator and excitation system or power generating plant are monitored for normal operation and to detect deviations in accordance with workplace procedures
- 5.3** Relevant personnel are notified when defects and abnormal operating conditions are detected in accordance with workplace procedures
- 6 Analyse system and plant faults**
- 6.1** Causes of abnormal generator and excitation system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
- 6.2** Generator and excitation system or power generating plant integrity are maintained in consultation with relevant personnel and reference to technical and operational documentation in accordance with workplace procedures
- 6.3** Relevant personnel, including specialists, are arranged for investigation of identified operational abnormalities in accordance with workplace procedures
- 7 Complete documentation**
- 7.1** Power generation plant problems, movements and status are reported in accordance with workplace procedures
- 7.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS515 Coordinate power generation.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS030 Coordinate power generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing generator and excitation system and power generation plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- controlling and coordinating power generation of electrical energy
- coordinating power generation control
- coordinating operation of equipment to maintain power generation plant integrity and continuity of supply, including:
 - clarifying power generation plant status
 - determining relevant corrective actions
 - maintaining power generator unit integrity
 - recognising abnormal plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- interpreting remote indication of power generation plant status and condition
- monitoring generator and excitation system and power generation plant
- operating generator and excitation system
- planning for one operator isolated power generation plant operations.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- analysis of system faults arrangements of power production plant
- coordination of power generation, including one operator isolated power generation plant operations
- generator excitation and cooling systems, types and characteristics
- identification of power generation plant status
- manuals
- operation of generator and excitation system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- power generation plant and equipment, location and operating parameters
- power generation plant process control systems, system components and interactions
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS031 Coordinate response to critical incidents

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to respond to incidents of a critical nature that may impact on the operations of power generation plant or its' system, endanger human life or property or have an adverse impact on the environment.

A critical incident refers to an event that may result in a high level of risk, directly or indirectly, to the core operations of a power generation facility. The level of risk is determined using the facility's risk management processes as outlined in the Risk Management System.

Competency in this unit requires the ability to identify critical incident and consequences, establish contingency plan, establish communications, coordinate response to a critical incident and the documentation of the incident and response. Individuals will, in general, work as an operator with responsibility for coordinating critical incident responses and risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS130 Respond to a critical incident

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify critical incident and consequences

- 1.1** Critical incidents and implications are identified and evaluated in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Secondary threats are identified and monitored in accordance with workplace procedures
- 1.4** Data is evaluated to determine probable causes, consequences and potential responses in accordance with workplace procedures

2 Establish contingency plan

- 2.1** Contingency and emergency response plans are identified, in accordance with workplace procedures
- 2.2** Additional resources are identified in accordance with workplace procedures
- 2.3** Alternate contingency plan strategies to cater for crisis variations are developed, in consultation with team members and in accordance with workplace procedures

3 Establish communications

- 3.1** Communication links with external authorities for coordination of resources are established in accordance with workplace procedures
- 3.2** Communication with key stakeholders is established to disseminate information in accordance with workplace procedures
- 3.3** Team roles, both internal and external, are identified and conveyed to personnel in accordance with workplace procedures

4 Coordinate response to critical incident

- 4.1** Response is coordinated with allowance made for personnel and equipment limitations in accordance with workplace procedures
- 4.2** Events and responses are prioritised with consideration given to the needs of stakeholders in accordance with workplace procedures

	4.3	Impact of secondary threats are identified and assessed in accordance with workplace procedures
	4.4	Contingency plan is actioned in accordance with workplace procedures
	4.5	Additional resources are coordinated and directed in accordance with workplace procedures
	4.6	Critical incident power generation restoration strategies are monitored, evaluated and adjusted in accordance with workplace procedures
5 Document incident and response	5.1	Critical incident equipment failure or problems are recorded and processed in accordance with workplace procedures
	5.2	Feedback from stakeholders and personnel debriefing comments are recorded and analysed in accordance with workplace procedures
	5.3	Critical incident reports and findings are generated and distributed to relevant personnel in accordance with workplace procedures
	5.4	Improvements to critical incident procedures are recommended to relevant personnel in accordance with workplace procedures
	5.5	Alternative contingency strategies are identified, analysed and recommendations are communicated to relevant personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS454 Coordinate response to critical incidents.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS031 Coordinate response to critical incidents

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with external and internal stakeholders
- conducting debriefings and reviewing stakeholder feedback
- coordinating critical incident situations
- coordinating personnel
- determining communications
- documenting critical incident and response using recording procedures
- establishing contingency and emergency response plans
- identifying critical incidents and consequences
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- organising and coordinating response to critical incidents
- using policies and procedures for critical incidents
- utilising data analysis techniques and tools when assessing critical incident risks and responses
- working with contingency plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication during critical incidents
- contingency and emergency response plans

- coordination of critical incident situations
- data analysis techniques and tools
- debriefings and stakeholder feedback methods
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- role of external authorities
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS032 Coordinate team activities

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to direct and coordinate team activities in the workplace to achieve agreed goals.

Team coordination is the process of turning a group of individuals into a cohesive team where they work together interdependently and cooperatively to meet the needs of the workplace.

Competency in this unit requires the ability to prepare for and coordinate teamwork, and conduct team meetings. Individuals will, in general, work as a coordinator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for teamwork

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and

safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored

1.2 Teamwork is planned in accordance with workplace procedures

1.3 Hazards and incidents related to performance of teamwork are identified and investigated and remedial action is planned and implemented in accordance with workplace procedures

1.4 Team communication requirements are identified in accordance with workplace procedures

1.5 Communication and information systems are used in accordance with workplace procedures

2 Coordinate teamwork

2.1 Site and team performance goals are identified and clarified with team members in accordance with workplace procedures

2.2 Cooperative interaction between team members is fostered in accordance with workplace procedures

2.3 Team roles are identified and coordinated in accordance with workplace procedures

2.4 Work plans for the team are developed, revised and coordinated in accordance with workplace procedures

2.5 Proposals for improvements are encouraged from team members in accordance with workplace procedures

2.6 Barriers to achievement of team goals and performance are identified and resolved, and referred to relevant personnel in accordance with workplace procedures

3 Conduct team meetings

3.1 Team meeting objectives are clarified, and research is prepared in accordance with workplace procedures

3.2 Meeting procedures are conveyed to team members in accordance with workplace procedures

3.3 Formal presentations are undertaken in team meetings in accordance with workplace procedures

3.4 Team members are encouraged to participate and are

given a hearing in meetings in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS440 Coordinate team activities.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS032 Coordinate team activities

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with team
- conducting team meetings
- coordinating teamwork
- developing work plans
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- instigating team goals
- maximising and utilising team potential through interpersonal techniques and skills
- monitoring team activities and resolving team member differences
- preparing for teamwork
- promoting team unity and providing team support.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication techniques and procedures
- coordination of work teams
- dispute resolution procedures
- interpersonal techniques and skills
- management of team meetings
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- team member competency and skill identification
- techniques for team goal setting
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- work plans
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS033 Coordinate the use of contingency plans

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the use of contingency plans that are developed to support the integrity of power generation facilities.

A contingency plan is a course of action designed to help a power generation facility respond to a significant event. A contingency plan should include any event that might disrupt power generation facility operations.

Competency in this unit requires the ability to identify contingencies, identify preferred contingency plans and complete all documentation. Individuals will, in general, work as coordinator in risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS040 Facilitate the use of contingency plans

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify potential risks	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Impact of risks are assessed and evaluated for impact in accordance with risk management system and workplace procedures
	1.3 Risks are arranged using a risk management matrix in order of priority and impact in accordance with workplace procedures
2 Coordinate preferred contingency plan	2.1 Processes for each identified risk are developed and coordinated in accordance with contingency plan and workplace procedures
	2.2 Workplace procedures and risk management strategies are mapped to contingency plan processes in accordance with workplace procedures
	2.3 Analysis of human, fiscal and resourcing requirements that may impact use of the contingency plan is undertaken in accordance with workplace procedures
3 Complete documentation	3.1 Contingency plan problems and status are reported in accordance with workplace procedures
	3.2 Contingency plan documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS451 Coordinate the use of contingency plans.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS033 Coordinate the use of contingency plans

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- categorising and working with contingency plan options
- communicating with personnel
- completing documentation
- coordinating preferred contingency plan
- developing and implementing contingency plan processes and procedures
- identifying potential risks
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- using risk management matrix tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- contingency plan processes and procedures
- contingency plans
- identification of potential risks and contingency options
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk management matrix tools
- WHS/OHS requirements, including:
 - emergency procedures

- risk control measures
- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS034 Coordinate wind farm operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the safe management of energy production at a wind farm.

A wind farm consists of a group of wind turbines in the same location used to produce electricity. Turbines at a wind farm are interconnected, with a substation transformer used to send the power to grid destination.

Competency in this unit requires the ability to plan for plant operation, monitor wind farm operations, control wind farm electrical energy production, test wind farm operation, analyse system or plant faults and the completion of all documentation. Individuals will, in general, work as an operator at a wind farm with responsibilities for coordination activities.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan for plant operation

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Preoperational checks of wind farm plant and equipment are carried out in accordance with workplace procedures

2 Monitor wind farm operations

- 2.1** Wind turbines and equipment are monitored for normal operation in accordance with workplace procedures
- 2.2** Alarms are acknowledged, prioritised and responded to in accordance with workplace procedures
- 2.3** Deviations from wind farm operations are identified and corrective actions are taken in accordance with workplace procedures
- 2.4** Wind farm plant and equipment use is monitored in key areas and trends in problems are identified in accordance with workplace procedures

3 Control wind farm electrical energy production

- 3.1** Wind farm energy output is controlled to meet operational or load requirements of power generation facility in accordance with workplace procedures
- 3.2** Wind turbines are manually adjusted to meet operational requirements in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3.3** Wind turbines are taken out of service and are shut down to meet operational and maintenance requirements in accordance with manufacturers' specifications and workplace procedures
- 3.4** Wind turbines are run-up and placed into service to meet operational requirements in accordance with manufacturers' recommendations and specifications, and workplace procedures

	3.5	Relevant personnel are notified when wind turbine defects and abnormal operating conditions are detected in accordance with workplace procedures
4 Test wind farm operation	4.1	Wind farm operational tests are performed in accordance with workplace procedures
	4.2	Wind farm system and plant is observed for operational response in accordance with workplace procedures
	4.3	Wind farm system and plant is returned to required operational status on completion of test in accordance with workplace procedures
5 Analyse wind farm system and plant faults	5.1	Causes of abnormal wind farm system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	5.2	Wind farm system and plant integrity and personnel safety are maintained in consultation with personnel, and technical and operational documentation in accordance with workplace procedures
	5.3	Relevant personnel, including specialists, are arranged for investigation of identified operational wind farm abnormalities in accordance with workplace procedures
6 Complete documentation	6.1	Wind farm plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS443 Coordinate wind farm operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS034 Coordinate wind farm operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing wind farm system and plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (WHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- controlling wind farm electrical energy production
- coordinating wind farm electrical energy generation, including:
 - identifying wind farm plant status
 - operating interacting systems
 - running wind farm plant and equipment
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring wind farm operations
- planning for wind farm plant operation
- preparing wind farm plant and equipment for operation
- recognising and responding to abnormal wind farm plant operating conditions
- testing wind farm operation using diagnostic and testing techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- wind farm generator and system stability principles
- wind farm plant and equipment, location and operating parameters, including:
 - wind farm control system types
 - wind farm system components and interactions
 - wind turbine and generator types and characteristics
 - wind turbine support systems
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS035 Coordinate workplace communication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate workplace communication and meetings.

Workplace communication is the process of exchanging information, both verbal and non-verbal, within a team. Communication fosters working relationships which can improve morale and lead to productivity increases.

Competency in this unit requires the ability to plan and prepare for communication, coordinate team communication, coordinate workplace meetings and represent team views. Individuals will, in general, work as an operator with responsibility for coordinating communications, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS041 Facilitate effective workplace communication

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for communication	1.1 Communication requirements are identified in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3 Workplace communication system is planned and established in accordance with workplace procedures
	1.4 Workplace communications are monitored and modified in accordance with workplace procedures
2 Coordinate team communications	2.1 Forums, including briefings, meetings and committees, are scheduled and coordinated, as required, in accordance with workplace procedures
	2.2 Information on workplace communication is coordinated and provided to team members in accordance with workplace procedures
	2.3 Communication deficiencies are identified, and team members are made aware of action required and are informed of remedial options available, in accordance with workplace procedures
	2.4 Team members are encouraged to participate in workplace communication forums in accordance with workplace procedures
3 Coordinate workplace meetings	3.1 Meetings are planned and organised, including distribution and clarification of agenda, notification of date, venue and attendees, in accordance with workplace procedures
	3.2 Format and rules of meetings are established and applied in accordance with workplace procedures
	3.3 Views of personnel are presented in minutes in accordance with workplace procedures
	3.4 Meeting outcomes and agreed action plans are recorded, and details of next meeting are confirmed, in accordance with workplace procedures
4 Represent team views	4.1 Team view is determined, including possible options and

acceptable alternatives or compromises, prior to a presentation in accordance with workplace procedures,

- 4.2 Team view is presented clearly and concisely in accordance with workplace procedures
- 4.3 Decisions and outcomes are conveyed to team members in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS450 Coordinate workplace communication.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS035 Coordinate workplace communication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- coordinating team communications
- facilitating team meetings
- identifying team member problems with interpreting instructions and communicating with others
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing workplace meetings
- planning and preparing for communication
- preparing meeting minutes and agendas
- representing team views after extracting information from team members
- using communication equipment
- utilising communication techniques and procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- team member communication problems
- plan and prepare for workplace communication, including:
 - communication equipment
 - facilitation of team meetings
 - meeting agenda requisites

- meeting and communication principles and procedures
- preparation of minutes
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS036 Develop H.V. switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to develop high voltage (H.V.) switching programs where multiple sources of supply must be considered and managed.

Switching can be set up to provide power to critical circuits, or to entire electrical subpanels, or to allow loads in large backup generator installations to be smoothly transferred from the utility to synchronised generators and back again.

Competency in this unit requires the ability to interpret requirements, research switching program, draft switching programs and validate switching programs. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Interpret requirements	1.1 Notification of switching program requirement is confirmed and assessed in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3 Area of planned outage is identified in consultation with relevant personnel, power generation system diagrams, drawings and maps in accordance with workplace procedures
	1.4 Work details are interpreted from outage request and draft switching program in accordance with workplace procedures
2 Research switching program	2.1 Implications of switching program on the power generation system are identified and recognised in accordance with workplace procedures
	2.2 Types and function of switchgear to be operated are identified and suitability for operation under forecast system conditions during scheduled outage is assessed in accordance with workplace procedures
	2.3 System loadings, limitations and alternate supply route capabilities are evaluated to ensure system integrity in accordance with workplace procedures
	2.4 Consultation with relevant personnel affected by the switching program is undertaken in accordance with workplace procedures
	2.5 Location of isolation points are identified to ensure shortest route when determining sequence of switching steps in accordance with workplace procedures
	2.6 Safe working clearances are identified and maintained in accordance with workplace procedures
	2.7 H.V., low voltage (L.V.) and control circuitry is examined to ensure no back-feed in accordance with workplace procedures
3 Draft switching program	3.1 Switching program draft is documented, including

- location, apparatus, identification and the operation to be conducted, in accordance with workplace procedures,
- 3.2 Permit to work procedures are implemented in accordance with workplace procedures
 - 3.3 Switching program is planned and implemented in accordance with workplace procedures
 - 3.4 Switching program is checked for omissions in accordance with workplace procedures
 - 3.5 All documentation supporting the switching program is completed in accordance with workplace procedures
- 4 Validate switching program**
- 4.1 Switching program is forwarded to relevant personnel for verification in accordance with workplace procedures
 - 4.2 Documentation is recorded in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS428 Develop H.V. switching programs.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS036 Develop H.V. switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - risk control measures
 - safe working practices
 - site emergency procedures
- communicating with personnel
- documenting and reporting switching program
- drafting switching program
- identifying power generation plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting switching program requirements
- researching switching program using data analysis techniques and tools
- utilising manuals
- validating switching program
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- draft switching program
- high voltage (H.V), low voltage (L.V.) and control circuitry
- isolations
- manuals
- permit to work system

- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- switch program
- switchgear types and characteristics
- validation of switching programs
- WHS/OHS requirements, including:
 - site emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS037 Ensure compliance with work health and safety policy and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to ensure work health and safety (WHS)/occupational health and safety (OHS) policies and procedures are followed in order to ensure safety in the workplace.

WHS/OHS is concerned with protecting the health and safety of all stakeholders in the workplace from exposure to hazards and risks resulting from work activities. It involves the application of WHS/OHS legislation and codes of practice, meeting regulatory obligations, identifying risks, determining strategies for control of risks and responding quickly to incidents.

Competency in this unit requires the ability to identify WHS/OHS policies and procedures, contribute to WHS/OHS in the workplace, confirm WHS/OHS compliance and maintain WHS/OHS records. Individuals will, in general, work as an operator in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify WHS policies and procedures

- 1.1** WHS/OHS regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** WHS/OHS procedures for dealing with accidents, fires and emergencies are maintained and updated in accordance with workplace procedures
- 1.3** Information about identified hazards and the outcome of risk assessments and risk control procedures are provided to personnel and stakeholders in accordance with workplace procedures

2 Contribute to WHS in the workplace

- 2.1** Hazards are identified and reported to designated personnel in accordance with workplace procedures
- 2.2** WHS/OHS issues raised with designated personnel are confirmed in accordance with workplace procedures and WHS/OHS legislation requirements

3 Confirm WHS compliance

- 3.1** Risk control compliance is monitored in accordance with workplace procedures
- 3.2** Inadequacies in existing risk control measures are identified and reported in accordance with workplace procedures and hierarchy of control
- 3.3** Inadequacies in resource allocation for implementation of risk control measures are identified and reported to designated personnel in accordance with workplace procedures
- 3.4** Work is stopped and safety discussion is conducted where non-compliance is observed

4 Maintain WHS records

- 4.1** WHS/OHS records are completed in accordance with workplace procedures
- 4.2** WHS/OHS records are monitored for compliance in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS364 Ensure compliance with Work Health and Safety policy and procedures.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS037 Ensure compliance with work health and safety policy and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - controlling risks
 - emergency procedures and techniques
 - recognising potential hazards
 - safe working practices
- communicating effectively with personnel and stakeholders
- confirming WHS/OHS compliance
- contributing to WHS/OHS in the workplace
- identifying WHS/OHS policies and procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- maintaining WHS/OHS records
- reporting of WHS/OHS issues.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication of WHS/OHS requirements
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- reporting obligations for WHS/OHS issues
- WHS/OHS requirements, including:
 - recognising potential hazards
 - controlling of risks
 - emergency procedures and techniques

- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS038 Evaluate cost estimations and initiate appropriate solutions

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to evaluate estimated costs for planned and forced power generation plant outages (either a single item or whole unit) and to initiate appropriate solutions.

An outage is when power generation plant and equipment is not available to perform intended function. Forced outage is the shutdown of power generation plant, equipment or a power generation facility when a generating unit is unavailable to produce power due to an unexpected breakdown.

Competency in this unit requires the ability to evaluate work details, identify costs, develop solutions and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator with responsibility for maintenance budgets.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECO0001 Estimate electrotechnology projects

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Evaluate work details

- 1.1** Power generation plant outage work plan and methods are evaluated in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Timeframes for power generation plant outage work are identified in accordance with workplace procedures
- 1.4** Details of materials, equipment, specialist services and contractual provisions are identified in accordance with workplace procedures
- 1.5** Specific disposal requirements are evaluated in accordance with workplace procedures

2 Identify costs

- 2.1** Costs associated with the planned and forced outages are evaluated in accordance with workplace procedures
- 2.2** Previous planned and forced outages are analysed to determine problems in accordance with workplace procedures

3 Develop solutions

- 3.1** Potential solutions to limit timeframe and budget over runs are identified in accordance with workplace procedures
- 3.2** Potential variations in planned and forced outages scope of work are identified and solutions are developed in accordance with workplace procedures

4 Complete documentation

- 4.1** Evaluation report is produced in accordance with workplace procedures
- 4.2** Possible increases in budget are documented in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS520 Evaluate cost estimations and initiate appropriate solutions.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS038 Evaluate cost estimations and initiate appropriate solutions

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with key stakeholders
- completing documentation
- developing planned and forced outage cost solutions
- evaluating planned and forced outage details
- identifying planned and forced outage costs using data analysis
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- producing quotations and cost options
- recognising cause and consequences of potential costs using data analysis techniques and tools
- utilising costing and quoting techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- costing and quotation techniques
- data analysis
- planned and forced outages
- potential solutions for outage costs
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS039 Evaluate scheduling of generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the evaluation of a power generation plant schedule to meet forecast demand.

Scheduling is the process of arranging and optimising the use of generating plant and personnel in a power generation facility. Scheduling can have a major impact on the productivity and costs of a power generation facility.

Competency in this unit requires the ability to analyse load profile, evaluate power generation unit availability and capability, evaluate power generation unit schedule and complete documentation. Individuals will, in general, work as an operator with responsibility for scheduling in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS132 Schedule generation

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Analyse load profile

- 1.1** Information on variables which have the potential to affect power generation demand and load are analysed in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Power generation forecasts are produced in accordance with workplace procedures
- 1.4** Power generation forecasts are evaluated against real time trends, and adjustments are made in accordance with workplace procedures

2 Evaluate unit availability and capability

- 2.1** Power generation unit status is analysed to maintain the integrity of scheduling plans in accordance with workplace procedures,
- 2.2** Information on power generation unit status is processed and recorded to enable the identification of problems in accordance with workplace procedures
- 2.3** Relationships are maintained with remote and independent power generators in accordance with workplace procedures

3 Evaluate generation unit schedules

- 3.1** Base load generation schedules are analysed in line with contractual obligations in accordance with workplace procedures
- 3.2** Peak load generation schedules are analysed to meet power generation system demand to maintain adequate spinning reserve capability in accordance with workplace procedures
- 3.3** Schedule is evaluated to confirm power generation units are operating in accordance with fuel strategies framework and workplace procedures
- 3.4** Megawatts and megavar spinning reserve criteria are continuously evaluated in accordance with workplace procedures

- 3.5 Power generation system security criteria are analysed continuously in accordance with workplace procedures
 - 3.6 Quality of supply is analysed continuously in accordance with legislative requirements and workplace procedures
 - 3.7 Power generation plant maintenance commitments are analysed when setting priorities for committing power generation units in accordance with workplace procedures
 - 3.8 Schedule is produced with sufficient lead time to allow power generation plant movements to occur in accordance with workplace procedures
 - 3.9 Power generation plant problems are assessed for impact on unit commitment and scheduling requirements in accordance with workplace procedures
 - 3.10 Power generation plant testing is incorporated into priorities for committing power generation units in accordance with workplace procedures
- 4 Complete documentation**
- 4.1 Scheduling information is recorded in accordance with workplace procedures
 - 4.2 Key stakeholders are informed of scheduling evaluation outcomes in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS524 Evaluate scheduling of generation plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS039 Evaluate scheduling of generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing and forecasting load profile
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures and techniques
 - risk control measures
 - safe working practices and procedures.
- assessing power generation unit availability and capability
- communicating with stakeholders
- completing documentation using recording procedures
- evaluating power generation unit schedules
- evaluating scheduling of power generating units for efficiency using data analysis techniques and tools
- identifying power generation unit status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- preparing and implementing power generation schedules
- scheduling power generation plant to meet demand
- using manuals
- utilising fuel strategies.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- evaluation techniques and tools
- framework for fuel strategies
- identification of power generation unit status

- load profile forecasts
- manuals
- operation and load characteristics of power generation plant
- power generation plant and equipment, location and operating parameters
- power generation schedule implementation
- power generation schedules, including peak load generation schedules
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- stakeholder liaison
- WHS/OHS requirements, including:
 - emergency procedures and techniques
 - risk control measures
 - safe working practices and procedures.
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS040 Facilitate the use of contingency plans for power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to facilitate the use of contingency plans that are developed to support the integrity of power generation facilities.

A contingency plan is a course of action designed by a power generation facility to respond to potentially disruptive situations.

Competency in this unit requires the ability to identify contingencies, identify preferred contingency plans and complete all documentation. Individuals will, in general, work as an operator with responsibility for contingency planning or risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify contingencies	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Impact of risks is assessed and evaluated from the risk management system and discussed with relevant personnel and stakeholders in accordance with workplace procedures
2 Identify contingency plan processes	2.1 Contingency plan processes are identified and applied in accordance with workplace procedures 2.2 Roles and responsibilities for the contingency plan are identified in accordance with workplace procedures
3 Complete documentation	3.1 Power generating plant problems, movements and status are reported in accordance with contingency plan and workplace procedures 3.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS370 Facilitate the use of contingency plans for power generation facilities.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS040 Facilitate the use of contingency plans for power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- completing documentation
- identifying potential contingencies to support the integrity of power generation facilities
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- recognising and using contingency plan processes.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- application of contingency plans
- arrangements of power production plant
- identification of contingency plan processes
- power generating plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation

- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS041 Facilitate workplace communication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to facilitate workplace communication.

Workplace communication is the process of exchanging information, both verbal and non-verbal, within a team or unit.

Competency in this unit requires the ability to plan and prepare for communication, facilitate team communications and determine team views. Individuals will, in general, work as a coordinator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for communication

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Communication requirements are identified from relevant personnel and documentation in accordance with workplace procedures

1.2 Work health and safety (WHS)/occupational health and

		safety (OHS) and workplace procedures are identified applied and monitored
	1.3	Workplace communication system is established in accordance with workplace procedures
	1.4	Workplace communication system is monitored and modified in accordance with workplace procedures
2 Facilitate team communications	2.1	Workplace briefings and meetings are scheduled and facilitated in accordance with workplace procedures
	2.2	Written and verbal reports are presented clearly, concisely and logically in accordance with workplace procedures
3 Determine team views	3.1	Team consensus is achieved in accordance with workplace procedures
	3.2	Agendas and minutes are used to convey team decisions to relevant personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS338 Facilitate workplace communication.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS041 Facilitate workplace communication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements
- communicating with team members using appropriate methods and techniques
- determining team views
- facilitating team communications
- planning and preparing for team communications
- using workplace communication procedures
- working with meeting agendas and minutes.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- meeting agendas and minutes
- WHS/OHS legislated requirements
- workplace documentation
- plan and prepare for workplace communication, including:
 - communication equipment
 - document writing
 - facilitation of team meetings
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so;

where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS042 Implement dam safety surveillance procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the scheduling, implementation and reporting of dam safety surveillance.

Surveillance of dams is undertaken to ensure they are operating safely. Reports on dam safety are also required to meet the power generation facility's legislative requirements.

Competency in this unit requires the ability to plan work, implement dam safety surveillance and complete safety surveillance reports. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for dam surveillance

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and

	workplace procedures are identified, applied and monitored
	1.2 Resources are identified and obtained in accordance with workplace procedures
	1.3 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.4 Monitoring frequency and sites for dam surveillance are determined in accordance with workplace procedures
	1.5 Instrument requirements and data collection methods are identified in accordance with workplace procedures
2 Conduct dam safety surveillance	2.1 Dam safety surveillance processes and procedures are implemented in accordance with workplace procedures
	2.2 Data from instruments and personnel is collected and processed in accordance with workplace procedures
	2.3 Test and measurement instruments are used in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.4 Abnormal conditions and defects are identified and reported to relevant personnel in accordance with workplace procedures
3 Complete safety surveillance reports	3.1 Calibration of instruments is checked after use in accordance with manufacturers' recommendations and specifications, and workplace procedures
	3.2 Dam surveillance reporting and documentation is undertaken in accordance with legislative requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS345 Implement dam safety surveillance procedures.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS042 Implement dam safety surveillance procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- collecting, processing and analysing data
- communicating with personnel
- completing dam safety surveillance reports using documentation procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting dams
- interpreting manuals
- planning for dam surveillance
- reading dam drawings, plans and charts
- undertaking dam safety surveillance
- using equipment and instruments, including testing and recording equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydro power production plant
- dam design principles
- dam types and characteristics
- data collection methods and techniques
- hydro power plant and equipment, location and operating parameters

- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- required responses to dam surveillance findings
- surveillance of dams
- testing and recording equipment
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS043 Interpret and analyse multi-operation protection devices

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to interpret and analyse multi-operation high voltage (H.V.) protection devices.

Power protection schemes aim to keep the power system stable by isolating only faulty plant or equipment to ensure the network is operational. The devices that are used to protect the power system are called protection devices.

Competency in this unit requires the ability to respond to a protection operation, interpret and determine cause of protection operation, restore protection and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS001 Analyse single operation protection devices

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Respond to multi-operation protection

- 1.1** Protection operation is confirmed, and multi-operation protection devices are identified for use in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Apparatus affected is identified in accordance with workplace procedures
- 1.4** Targets, flags and alarms are identified and recorded in accordance with workplace procedures
- 1.5** Stakeholders are advised in accordance with workplace procedures

2 Interpret and determine cause of multi-operation protection

- 2.1** Information to external stakeholders is recorded in accordance with workplace procedures
- 2.2** Information for internal use on use of multi-operation protection devices is collated and assessed in accordance with workplace procedures
- 2.3** Sequence of events prior to and following recognition of fault and use of multi-operation protection devices are identified and assessed in accordance with workplace procedures
- 2.4** Multi-operation protection devices are assessed and evaluated in accordance with workplace procedures
- 2.5** Findings from assessment of multi-operation devices are analysed to determine probable cause of fault in accordance with workplace procedures

3 Restore protection

- 3.1** Stakeholders are informed of analysis findings and plan of action in accordance with workplace procedures
- 3.2** Multi-operation protection device indicators are reset in accordance with workplace procedures

- 3.3 Corrective action is taken in relation to identified fault in accordance with workplace procedures
- 4 **Complete documentation**
 - 4.1 Records are maintained and all use of multi-operation protection devices are documented in accordance with workplace procedures
 - 4.2 Reports are forwarded to authorised personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS426 Interpret and analyse multi-operation protection devices.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS043 Interpret and analyse multi-operation protection devices

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with stakeholders
- completing documentation
- determining cause of multi-operation protection device operation using diagnostic techniques
- evaluating protection multi-operation protection device operation and determining response
- identifying power generation plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- recognising abnormal power generation plant, system and equipment operating conditions
- responding to multi-operation protection device operation using data analysis techniques and tools
- restoring power system through use of multi-operation protection devices
- using corrective actions.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- interpreting and determining cause of faults in power generation system
- manuals
- multi-operation protection devices and schemes
- multi-operation protection devices operation

- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- restoring protection to power generation system
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS044 Liaise with stakeholders

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to communicate with external and internal stakeholders.

Communication with stakeholders is about exchanging information, both verbal and non-verbal, with various internal and external personnel and organisations who may have an interest in the outcomes or activities of the workplace. Communicating with internal and external stakeholders requires the application of methods and techniques that enhance participation.

Competency in this unit requires the ability to plan and prepare for communication, communicate in writing, communicate orally, use communications systems and complete documentation. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for communication

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

- of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Medium and tools for communication with stakeholders are determined in accordance with workplace procedures
 - 1.3** Urgent and important information for stakeholders is provided in accordance with workplace procedures
- 2 Communicate in writing**
- 2.1** Written communication is structured to provide or request information in accordance with workplace procedures
 - 2.2** Format is identified from analysis of available options and current circumstances in accordance with workplace procedures
 - 2.3** Written communication is concisely and logically presented in accordance with workplace procedures
 - 2.4** Information dissemination protocols are used in accordance with workplace procedures
- 3 Communicate orally**
- 3.1** Oral communication for stakeholders is structured to provide and/or request information in accordance with workplace procedures
 - 3.2** Oral communication is conveyed in accordance with workplace procedures
 - 3.3** Intent of oral communication is confirmed in accordance with workplace procedures
 - 3.4** Information dissemination protocols are used in accordance with workplace procedures
- 4 Use communications systems**
- 4.1** Communications system is used in accordance with manufacturers' specifications and workplace procedures
 - 4.2** Communications system is maintained and updated in accordance with workplace procedures
- 5 Complete documentation**
- 5.1** Communication equipment problems are reported in accordance with workplace procedures
 - 5.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS249 Liaise with stakeholders.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS044 Liaise with stakeholders

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating orally and in writing
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- preparing for communication
- using relevant communication mediums
- utilising communications systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication systems, including electronic mediums
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- verbal and written communication techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS045 Maintain and utilise records

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain and use recorded data. Power generation facility records are maintained and retrieved so that relevant data can be utilised.

Recorded information can include transactions, historical data, personnel details, stakeholder information and compliance obligations. Records should provide evidence of meeting organisational and legal requirements.

Competency in this unit requires the ability to prepare and maintain records and retrieve and utilise records. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Maintain records

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Recording tool is selected in accordance with workplace procedures

1.2 Work health and safety (WHS)/occupational health and

safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored

	1.3	Information is recorded and maintained using document and record management system in accordance with workplace procedures
	1.4	Recording requirements are identified and assessed in accordance with workplace procedures
	1.5	Records are created in accordance with workplace procedures
	1.6	Records are stored in accordance with workplace procedures
2 Retrieve and utilise records	2.1	Records are retrieved and utilised in accordance with workplace procedures
	2.2	Source of information and records are selected in accordance with workplace procedures
	2.3	Relevant information and records are selected in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS204 Maintain and utilise records.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS045 Maintain and utilise records

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- acquiring and analysing information relevant for recording
- applying work health and safety (WHS)/occupational health and safety workplace (OHS) procedures, including safety working practices
- archiving documents and records
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- creating, retrieving, storing and maintaining new and existing documents and records
- using a range of document and record management systems, including:
 - data acquisition and surveillance (DAS) systems
 - supervisory control and data acquisition (SCADA) systems
- utilising workplace procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- DAS and SCADA systems
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS legislation and regulations, including safety working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS046 Maintain battery banks and cells

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the maintenance of all battery cells or banks.

Batteries store energy so that it can be used when needed. Batteries can be charged, discharged and recharged several times. The types of equipment supported by batteries in a power generation facility can include emergency lighting systems and alarm and protection systems.

Competency in this unit requires the ability to plan and prepare for battery cell/bank maintenance work, conduct tests on battery cell/bank, analyse results of tests to determine capability, perform routine maintenance, report abnormalities and document work when completed. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1 Plan and prepare for work**
 - 1.1** Work requirements are identified from relevant personnel, documentation and site inspection in accordance with workplace procedures
 - 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
 - 1.3** Resources are obtained and inspected for compliance with job specification in accordance with workplace procedures
 - 1.4** Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
 - 1.5** Size, type and quantity of materials and components are obtained and inspected in accordance with workplace procedures
 - 1.6** Work is sequenced and prioritised in accordance with workplace procedures
 - 1.7** Potential hazards and risk control measures are selected and implemented in accordance with safety data sheets (SDS) processes and workplace procedures
 - 1.8** Work area is prepared in accordance with workplace procedures
- 2 Conduct tests on battery cell/bank**
 - 2.1** Battery cell and/or bank is inspected prior to testing to ensure absence of any damage and defects in accordance with workplace procedures
 - 2.2** Tests are carried out to determine battery cell or bank condition in accordance with workplace procedures
 - 2.3** Test results are recorded and analysed to determine battery cell and/or bank capabilities in accordance with workplace procedures
 - 2.4** Testing and measurement instruments are used in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.5** Faults found are documented and reported to relevant personnel in accordance with workplace procedures

3 Conduct maintenance on battery cell/bank	3.1 Isolations are confirmed in accordance with workplace procedures
	3.2 Battery cell and/or bank is maintained using plans, drawings and manuals in accordance with workplace procedures
	3.3 Cleaning or adjustments are carried out on battery cell and/or bank in accordance with workplace procedures
	3.4 Maintenance and adjustments are carried out in accordance with workplace procedures
	3.5 Final inspection is carried out in accordance with workplace procedures.
4 Complete work	4.1 Battery cell and/or bank work is completed and relevant personnel notified in accordance with workplace procedures
	4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
	4.3 Battery cell and/or bank tools and equipment are maintained and stored in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS238 Maintain battery banks and cells.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS046 Maintain battery banks and cells

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying maintenance techniques to repair faults
- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- communicating with personnel
- complying regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting drawings and manuals
- maintaining battery cell and/or bank equipment
- reporting findings
- selecting equipment and material
- testing battery cell or bank using diagnostic and data analysis techniques
- using safety data sheets (SDS)
- using testing and measurement instruments to identify faults and abnormalities
- utilising permit to work system
- working with isolation procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- battery cell and/or bank testing and maintenance procedures
- battery plant operation
- drawings and manuals
- isolations

- maintenance techniques
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safety and hazard precautions
- SDS
- testing and fault-finding techniques
- workplace documentation
- WHS/OHS requirements, including:
 - applying isolation procedures
 - emergency procedures
 - risk control measures
 - safe working procedures
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS047 Maintain quality systems within the team

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to oversee compliance of the maintenance quality system, using performance indicators, within a team environment.

Quality control is a process through which an organisation seeks to ensure that significant variations in quality are kept to a minimum. Quality control in power generation facilities will focus on a set of procedures intended to ensure that personnel, plant and equipment operate efficiently.

Competency in this unit requires the ability to formulate team aspects of the quality system and facilitate team quality systems. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS003 Apply quality systems to work

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Formulate team aspects of the quality system

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

		of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2	Team performance indicators are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3	Quality system documentation is obtained and modified in accordance with quality assurance standards and workplace procedures
2 Facilitate team quality systems	2.1	Team discussion on quality system is undertaken in accordance with workplace procedures
	2.2	Quality system is monitored in accordance with quality assurance standards and workplace procedures
	2.3	Quality system is reviewed with the team to ensure currency and relevance in accordance with quality assurance standards and workplace procedures
	2.4	Quality system records for the team are maintained in accordance with quality assurance standards and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS337 Maintain quality systems within the team.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS047 Maintain quality systems within the team

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and includes:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- workplace policies and procedures
- maintaining records and documentation
- monitoring and reviewing quality system
- recommending and implementing workplace quality improvements
- undertaking performance reporting, including key performance indicators (KPIs) and key result areas
- using continuous improvement and quality management tools and techniques
- working with quality standards.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- industry quality standards
- Quality Management System (QMS) tools and continuous improvement techniques, including key result areas and KPIs
- records and documentation
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:

- emergency procedures
- safe working practices
- risk control measures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS048 Manage commissioning and decommissioning

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage the commissioning and decommissioning of power generation plant and equipment. It includes the reporting of progress and completion of work against key indicators, however, it does not cover the removal or return of plant to service under normal routine maintenance situations.

Commissioning refers to the process where equipment and plant is installed or completed and tested to verify it functions according to the design specification. Decommissioning refers to the planned shutdown or removal of equipment and plant from usage.

Competency in this unit requires the ability to plan work, commissioning of plant or equipment, decommissioning of plant or equipment, removal or disassembly of plant or equipment, recommissioning of plant or equipment and completing work. Individuals will, in general, work as an operator with responsibility for managing commissioning and decommissioning, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Commissioning and decommissioning management plan tasks are identified from relevant personnel and site inspection in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Resources to comply with commissioning and decommissioning management plan are obtained and inspected for compliance in accordance with workplace procedures 1.4 Relevant plans, drawings and manuals in the commissioning and decommissioning management plan are used in accordance with workplace procedures 1.5 Commissioning and decommissioning work is sequenced and prioritised in accordance with management plan and workplace procedures 1.6 Isolations and sequencing are managed in accordance management plan and workplace procedures 1.7 Potential hazards are identified and risk control measures implemented and managed in accordance with management plan and workplace procedures 1.8 Work area is determined in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures 1.9 Roles and responsibilities are assigned and managed in accordance with management plan and workplace procedures
2 Commission plant or equipment	2.1 Isolations are confirmed in accordance with management plan and workplace procedures

	2.2	Equipment is connected to energy or material sources in accordance with management plan and workplace procedures
	2.3	Equipment is commissioned in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
3 Decommission plant or equipment	3.1	Isolations are confirmed in accordance with management plan and workplace procedures
	3.2	Equipment is disconnected from energy or material sources in accordance with management plan and workplace procedures
4 Remove and disassemble plant or equipment	4.1	Isolations are confirmed in accordance with management plan and workplace procedures
	4.2	Removal of plant or equipment, or disassembly of major components is carried out, in accordance with management plan and workplace procedures
	4.3	Unused electrical conductors are isolated and terminated in accordance with management plan and workplace procedures
	4.4	Other sources of energy or materials are terminated and blanked in accordance with management plan and workplace procedures
5 Recommission plant or equipment	5.1	Generation plant or equipment is de-isolated in accordance with management plan and workplace procedures
	5.2	Preoperational checks are carried out on plant or equipment in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
	5.3	Sequence for recommissioning procedures is managed in accordance with management plan and workplace procedures
	5.4	Generation plant or equipment is tested for operation in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
	5.5	Generation plant or equipment performance is monitored

and tested in accordance with management plan and workplace procedures

- 5.6 Data is collected and referenced and variances recorded in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
- 5.7 Generation plant or equipment is adjusted using relevant techniques in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
- 5.8 Final inspections and performance data is collected and recorded in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures

6 Complete work

- 6.1 Work is completed and relevant personnel are debriefed in accordance with management plan and workplace procedures
- 6.2 Work area is cleared of waste in accordance with management plan and workplace procedures
- 6.3 Specialist tools and equipment are maintained and stored in accordance with management plan, manufacturers' recommendations and specifications, and workplace procedures
- 6.4 Completion details, including report and recommendations are finalised, in accordance with management plan and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS508 Manage commissioning and decommissioning.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS048 Manage commissioning and decommissioning

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing data
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work, including reports
- identifying generation plant or equipment
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- implementing, commissioning and decommissioning of generation plant or equipment management plan
- interpreting manuals
- managing commissioning and decommissioning of generation plant or equipment
- performing decommissions, recommissions and isolations
- planning and preparing for work related to the management of commissioning and decommissioning tasks
- recommissioning generation plant or equipment
- removing and disassembling generation plant or equipment
- using testing and measuring equipment
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- commission, decommission and recommission management plans, including resourcing and implementation procedures
- generation plant and equipment, location and operating parameters, including performance limits
- generation plant or equipment commissioning and decommissioning
- isolations
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- report processes
- testing and measurement equipment for analysis of data
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS049 Manage critical incidents

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the management of incidents of a critical nature that may impact the operational effectiveness of a power generation facility's plant or system. It may include endangering human life, damaging or destroying property or adversely impacting the environment.

A critical incident refers to an event that may result in a high level of risk, directly or indirectly, to the core operations of a power generation facility. The level of risk is determined using the risk management processes outlined in the power generation facility's risk management system.

Competency in this unit requires the ability to identify a crisis, implement contingency and critical incident plans, establish communications, manage critical incident documents and review critical incident response. Individuals will, in general, work as an operator with responsibility for risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS130 Respond to a critical incident

UEPOPS031 Coordinate response to critical incidents

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify critical incident and consequences

- 1.1** Critical incident and probable implications are identified and analysed in accordance with risk management system and workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Secondary threats from the critical incident are identified and monitored in accordance with risk management system and workplace procedures
- 1.4** Data related to critical incident is evaluated and managed to determine cause consequences and potential responses in accordance with risk management system and workplace procedures
- 1.5** Critical incident management team is activated and individual roles and responsibilities identified and managed in accordance with risk management system and workplace procedures

2 Implement contingency and critical incident plan

- 2.1** Contingency and critical incident plans are implemented using risk management system documentation in accordance with workplace procedures
- 2.2** Additional resources are identified in accordance with risk management system and workplace procedures
- 2.3** Alternate strategies to cater for crisis variations are managed in consultation with key stakeholders in accordance with risk management system and workplace procedures

3 Establish communications

- 3.1** Communication links with external authorities are established for coordination of resources in accordance with risk management system and workplace procedures
- 3.2** Communication with key stakeholders is established to disseminate information in accordance with risk

- management system and workplace procedures
- 4 Supervise critical incident**
- 4.1** Critical incident response is managed in accordance with risk management system and workplace procedures
- 4.2** Critical incident events and responses are prioritised, related to risk and the needs of stakeholders, in accordance risk management system and workplace procedures
- 4.3** Personnel and key stakeholder actions are monitored and managed in accordance with risk management system and workplace procedures
- 4.4** Impact of secondary threats are managed in accordance risk management system and workplace procedures
- 4.5** Contingency and critical incident plans are actioned and managed in accordance with risk management system and workplace procedures
- 4.6** Additional resources are directed and managed in accordance with risk management system and workplace procedures
- 4.7** Restoration strategies are monitored, evaluated and adjusted in accordance risk management system and workplace procedures
- 5 Document and review critical incident response**
- 5.1** Equipment failure and problems are managed in accordance with risk management system and workplace procedures
- 5.2** Critical incident feedback from key stakeholders is analysed and managed in accordance with risk management system and workplace procedures
- 5.3** Critical incident report, with alternative preventative measures, is distributed to relevant personnel in accordance with risk management system and workplace procedures
- 5.4** Improvements to critical incident management processes and procedures are managed in accordance with risk management system and workplace procedures
- 5.5** Alternative strategies are identified and analysed, and recommendations are communicated to relevant personnel in accordance with risk management system

and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS523 Manage critical incidents.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS049 Manage critical incidents

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating and liaising with key stakeholders
- coordinating operation of system network
- determining contingency and critical incident plans
- documenting and reviewing critical incident and response
- identifying critical incident and potential consequences
- implementing contingency and critical incident plans
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- instigating communications, including recording procedures
- managing critical incident
- recognising plant status, including abnormal system operating conditions, using data analysis techniques and tools
- supervising emergency situations, including directing and managing personnel
- undertaking critical incident planning using diagnostic techniques
- using critical incident policies and procedures
- utilising risk management system
- working with restoration strategies.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including plant and equipment, location and operating parameters
- contingency and critical incident plans
- critical incident planning and management
- external critical incident authorities
- plant status, including system network characteristics
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- restoration strategies
- risk management systems
- risk mitigation processes
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS050 Manage environmental management systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage the environmental management strategy of the power generation facility. It involves the implementation of policies and procedures related to environmental legislation and regulations that impact the power generation industry.

Environmental legislation is a collection of laws and regulations aimed at protecting the environment from harmful actions. Federal, state/territory and local governments jointly administer environmental protection laws in Australia.

Competency in this unit requires the ability to plan, implement, manage and monitor environmental management strategies. Individuals will, in general, work as an operator with responsibility for environmental management systems, in a power generation facility.

No licensing or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

No prerequisites are required for this unit.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan environmental management strategies	1.1 Environmental management system plan and strategies are identified and clarified with all stakeholders, including external organisations, in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Environmental management system activities and operation are identified and investigated to ensure that hazard minimisation strategies are developed and implemented in accordance with workplace procedures 1.4 Environmental management system strategies for identified problems are developed and prioritised for implementation in accordance with workplace procedures 1.5 Timelines, schedules and targets are established to ensure environmental management system objectives are managed in accordance with workplace procedures 1.6 Financial resources, personnel, physical facilities and equipment are procured and managed to achieve environmental management system performance outcomes in accordance with workplace procedures
2 Manage environmental management strategies	2.1 Environmental management system strategies are documented, assessed and evaluated to control risks in accordance with workplace procedures 2.2 Results and recommendations relating to environmental management system are documented and confirmed with stakeholders in accordance with workplace procedures 2.3 Environmental management system and strategies are promoted to all stakeholders in accordance with workplace procedures
3 Monitor environmental management strategies	3.1 Data is collected and managed to provide accurate measures of performance with environmental management system plan in accordance with workplace procedures 3.2 Statistical comparisons between environmental

management system objectives and performance are managed and reported in accordance with workplace procedures

- 3.3 Feedback from stakeholders is evaluated and managed to determine changes to environmental management system plan and strategies in accordance with workplace procedures
- 3.4 Changes to implemented strategies are recommended and managed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS528 Manage environmental management systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS050 Manage environmental management systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- carrying out environmental planning and strategy development
- communicating with stakeholders
- identifying sources of pollution and minimisation procedures
- identifying and responding to environmental issues and change
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing resources
- managing risk management control measures
- monitoring and reviewing environmental strategies
- monitoring environmental management strategies and procedures
- producing and managing environmental management strategies
- recognising and managing potential environmental hazards and issues
- recommending environmental management system strategy change
- researching and producing environmental reports using data analysis techniques and tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and range of conditions and include knowledge of:

- arrangements of power production plant
- environmental management system planning and strategy development
- environmental planning and management techniques and tools

- potential impacts of environmental hazards including pollution
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- resource usage
- risk management planning, techniques and tools
- stakeholder liaison
- WHS/OHS requirements, including:
 - emergency strategies
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS051 Manage first response team

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage the operation of a first response team. It covers the development, implementation and review of the procedures for the operation of a first response team.

A first response team includes trained personnel who prepare for and respond to an emergency incident that poses an immediate risk in a power generation facility such as that caused through natural disaster, fire, hazardous spills or other dangerous events. First response teams must comply with federal, state/territory and local government laws and regulations for the management of emergency incidents.

Competency in this unit requires the ability to plan for operation of first response team, manage operation of first response team and report outcomes of the emergency response. Individuals will, in general, work as an operator with responsibility for risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS024 Coordinate first response team operation

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for operation of first response team

- 1.1** Purpose of first response team is identified and clarified with emergency response plan and risk management system in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Roles and responsibilities of external emergency services personnel are clarified and managed with emergency response plan and risk management system in accordance workplace procedures
- 1.4** First response team members are identified and assigned duties and responsibilities with emergency response plan and risk management system in accordance with workplace procedures
- 1.5** Directions or advice is provided to emergency service personnel and first response team members after site inspection with emergency response plan and risk management system in accordance with workplace procedures

2 Manage operation of first response team

- 2.1** Emergency incidents are investigated, assessed and evaluated to minimise hazards and control risks with emergency response plan and risk management system in accordance with workplace procedures
- 2.2** Emergency incident investigation results and recommendations are documented and managed with emergency response plan and risk management system in accordance with workplace procedures
- 2.3** Guidance is provided to emergency services with response plan and risk management system in accordance with workplace procedures
- 2.4** First response team materials, equipment and resources required for emergency incidents are obtained and managed with emergency response plan and risk management system in accordance with workplace

procedures

- 2.5** Debriefing is conducted and findings are responded to and managed with emergency response plan and risk management system in accordance with workplace procedures

3 Report outcomes of emergency response

- 3.1** Improvements to first response team emergency procedures are identified and managed with relevant personnel with emergency response plan and risk management system in accordance with workplace procedures
- 3.2** Results of debriefing are reported with emergency response plan and risk management system in accordance with workplace procedures
- 3.3** Improvements to incident response procedures are implemented and managed with emergency response plan and risk management system in accordance workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS527 Manage first response team.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS051 Manage first response team

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with the personnel and other organisations and agencies following an emergency
- employing risk management system
- identifying hazards
- identifying potential hazards
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing first response team's emergency plant and equipment for operation
- managing team's response to an emergency using emergency procedures and techniques
- planning and managing operation of first response team
- reporting outcomes of emergency response
- utilising emergency response plans

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- communication techniques, including stakeholder management
- emergency response plans
- equipment relevant to emergency tasks, including operation and maintenance
- management procedures of first response team in an emergency
- potential hazards

- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk management systems
- roles and responsibilities of emergency services
- roles of first response team members
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS052 Manage high voltage network system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage a high voltage (H.V.) network system that may be interconnected, remote or isolated.

Operators seek to optimise and manage H.V. network systems that are deployed to supply, transfer and store electrical power through efficient and safe operations at power generation facilities. This includes identifying faults, taking corrective actions and using protection programs to ensure network system stability.

Competency in this unit requires the ability to plan network system operations, manage and control network system, analyse and respond to network system faults or incidents, review incident response and preventative procedures, and complete all documentation. Individuals will, in general, work as an operator with responsibility for managing a H.V. network system, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS026 Coordinate the network system.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare network system operations

- 1.1** Information and documentation to determine power generation network system status is assessed and evaluated in accordance with H.V. system operating requirements and workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Power generation network system and associated equipment operational prerequisites are established in accordance with H.V. system operating requirements and workplace procedures
- 1.4** Sequence for operation of power generation network system sections and equipment is created for a range of potential scenarios in accordance with H.V. system operating requirements and workplace procedures
- 1.5** Power generation network system forecast is based on assessment of data and relevant information in accordance with H.V. system operating requirements and workplace procedures

2 Manage and control network system

- 2.1** Power generation network system is operated and managed in accordance with H.V. system operating requirements and workplace procedures
- 2.2** Power generation network system demand is managed using a contingency plan and strategies to maintain quality of supply in accordance with H.V. system operating requirements and workplace procedures
- 2.3** Power generation network system voltage and current requirements are assessed, evaluated and managed to maintain stability and H.V. system integrity in accordance with H.V. system operating requirements and workplace procedures
- 2.4** Voltage load profiles are identified to minimise transmission losses in accordance with power generation network system, H.V. system operating requirements

and workplace procedures

- 2.5 Power generation network system load shedding sequence and priorities are monitored and managed to ensure H.V. system integrity in accordance with H.V. system operating requirements and workplace procedures
- 2.6 Power generation network system data is monitored and managed for normal operation and to detect deviations in accordance with H.V. system operating requirements and workplace procedures
- 2.7 Corrective actions to rectify abnormalities in power generation network system are implemented following assessment of data in accordance with H.V. system operating requirements and workplace procedures
- 2.8 Resources to meet power generation network system requirements are managed in accordance with H.V. system operating requirements and workplace procedures

3 Analyse and respond to network system faults

- 3.1 Causes of power generation abnormal network system operating conditions are identified by analysing technical and operational information in accordance with H.V. system operating requirements and workplace procedures
- 3.2 Operation and management of power generation network system protection program is evaluated to determine nature and cause of faults in accordance with H.V. system operating requirements and workplace procedures
- 3.3 Communication with key stakeholders is established and managed to assist in identifying nature and source of H.V. system interference in accordance with H.V. system operating requirements and workplace procedures
- 3.4 Power generation network system integrity and personnel safety are managed in consultation with relevant personnel and technical and operational documentation, including contingency plans, in accordance with H.V. system operating requirements and workplace procedures

4 Review incident response

- 4.1 Power generation facility network system incident

and preventative procedures	responses are assessed and reviewed in accordance with H.V. system operating requirements and workplace procedures
	4.2 Alternative responses to contingencies are identified and assessed in accordance with H.V. system operating requirements and workplace procedures
	4.3 Alternative responses to contingencies are documented and managed in accordance with H.V. system operating requirements and workplace procedures
5 Complete documentation	5.1 Network system problems, movements and status are reported in accordance with H.V. system operating requirements and workplace procedures
	5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS512 Manage high voltage network system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS052 Manage high voltage network system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing and responding to faults and abnormal high voltage (H.V.) network system operating conditions using diagnostic techniques
- analysing and responding to H.V. network system faults or incidents using data analysis techniques and tools
- ascertaining type of H.V. network system
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures and techniques
 - risk control measures
 - safe working practices and procedures
- communicating with key stakeholders
- completing documentation using recording procedures
- directing and coordinating personnel and stakeholders
- identifying power generating facility's plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing and controlling H.V. network system operations
- planning H.V. network system operations
- preparing for H.V. network system operations
- reviewing incident response and preventative procedures
- selecting relevant load shedding
- using permit to work system
- working with contingency plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- contingency plans
- H.V. load shedding principles
- H.V. network system types and characteristics
- permit to work system
- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures and techniques
 - risk control measures
 - safe working practices and procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS053 Manage operational crisis to maintain or restore power system integrity

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage a crisis of a magnitude which affects the integrity and effectiveness of the power generation facility's system.

A crisis is defined as a significant threat to power generation operations that can have negative consequences if not handled with care. The risk management system ensures that the power generation facility identifies, assesses and prioritises risks and manages the application of resources to monitor and control the impact of potentially hazardous events.

Competency in this unit requires the ability to identify a crisis, establish a contingency plan, establish communications, manage crisis documents and review the crisis and response. Individuals will, in general, work as an operator with responsibility for risk management, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify crisis

- 1.1 Operational crisis and implications are identified and assessed in accordance with risk management system and workplace procedures
- 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3 Secondary threats from crisis events are identified and monitored in accordance with risk management system and workplace procedures
- 1.4 Network system configuration or power generation capability is evaluated in accordance with risk management system and workplace procedures
- 1.5 Data determining network system and power generation status is assessed and evaluated in accordance with risk management system and workplace procedures
- 1.6 External information is collated, assessed and managed in accordance with risk management system and workplace procedures
- 1.7 Probable cause of crisis is identified from available information and resources in accordance with risk management system and workplace procedures
- 1.8 Crisis team is activated and individual roles and responsibilities identified and managed in accordance with risk management system and workplace procedures

2 Implement contingency plan

- 2.1 Contingency and emergency response plans are implemented using risk management system documentation and workplace procedures
- 2.2 Additional resources are identified in accordance with risk management system and workplace procedures

- 2.3 Alternate strategies to cater for crisis variations are implemented in consultation with key stakeholders in accordance with risk management system and workplace procedures
- 3 **Implement communication**
 - 3.1 Communication links with external authorities are established and implemented to ensure coordination of resources in accordance with risk management system and workplace procedures
 - 3.2 Communication with key stakeholders is established and implemented to disseminate information in accordance with risk management system and workplace procedures
 - 3.3 Customers are assisted in accordance with risk management system policies and workplace procedures
- 4 **Manage crisis**
 - 4.1 Crisis response is managed in accordance with risk management system and workplace procedures
 - 4.2 Crisis events and responses are prioritised according to related risk and the needs of key stakeholders in accordance with risk management system and workplace procedures
 - 4.3 Impact of secondary threats are managed in accordance with risk management system and workplace procedures
 - 4.4 Contingency and emergency response plans are actioned and managed in accordance with risk management system and workplace procedures
 - 4.5 Additional resources are managed and directed in accordance with risk management system and workplace procedures
 - 4.6 Restoration strategies are monitored, evaluated and adjusted in accordance with risk management system and workplace procedures
 - 4.7 Power generation systems are stabilised and integrity is maintained in accordance with risk management system and workplace procedures
- 5 **Document and review crisis and response**
 - 5.1 Equipment failure and problems are identified and managed in accordance with risk management system procedures
 - 5.2 Crisis feedback from key stakeholders is analysed in

accordance with risk management system and workplace procedures

- 5.3 Crisis reports and findings are distributed to relevant personnel in accordance with risk management system and workplace procedures
- 5.4 Improvements to crisis management plans, processes and procedures are recommended to relevant personnel and key stakeholders in accordance with risk management system and workplace procedures
- 5.5 Alternative crisis management strategies are identified and analysed, and recommendations are communicated to relevant personnel and key stakeholders in accordance with risk management system and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS513 Manage operational crisis to maintain or restore power system integrity.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS053 Manage operational crisis to maintain or restore power system integrity

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures and techniques
 - safe working practices
 - site safety procedures
- communicating with personnel during a crisis event
- controlling crisis emergency situations
- detecting plant status, including interpreting remote indication of plant status and condition
- determining corrective actions using data analysis techniques and tools
- documenting and reviewing crisis events and responses
- identifying crisis events
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- instigating contingency and emergency response plans
- managing crisis, including oversight of personnel
- recognising abnormal plant operating conditions using diagnostic techniques
- responding to stakeholder feedback
- utilising communication techniques and methods, including recording procedures
- working with and managing the risk management system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- communication equipment, techniques and procedures

- contingency and emergency response plans
- control techniques and methods for crisis events
- manuals
- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk management systems
- risk mitigation processes
- role of external authorities and agencies
- stakeholder liaison and feedback
- stakeholder management techniques, including liaising with contractors and clients
- types of crises events
- WHS/OHS requirements, including
 - emergency procedures and techniques
 - safe working practices
 - site safety procedures
- workplace documentation workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS054 Manage operational strategies for power production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage operational strategies in achieving the short- and long-term goals of a power generation facility's production plant.

An operational plan of action describes how a power generation facility will employ resources in producing power. Operational strategies are the methods used to reach objectives and performance targets related to resources, personnel and the work processes outlined in the operational plan.

Competency in this unit requires the ability to identify short- and long-term strategies, implement and manage strategies and report outcomes of strategies. Individuals will, in general, work as an operator with responsibility for operational strategies, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify short- and long-term strategies	1.1 Purpose of short- and long-term strategies are identified and clarified with all stakeholders, including external organisations, in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Budgets, operational, maintenance and personnel requirements are evaluated with operational plan and strategies in accordance with workplace procedures 1.4 Data and operational information are analysed and evaluated in accordance with workplace procedures 1.5 Operating strategies are monitored and managed in accordance with workplace procedures 1.6 Team and individual roles and responsibilities are identified and managed in accordance with workplace procedures
2 Implement and manage strategies	2.1 Power generating plant operational procedures are reviewed and managed in consultation with stakeholders, operational plan and strategies in accordance with workplace procedures 2.2 Power generating plant operations and condition are managed and reported in accordance with workplace procedures 2.3 Power generating plant abnormal operating conditions are investigated and reported in accordance with workplace procedures 2.4 Critical resources and supplies for operational strategies are managed with operational plan in accordance with workplace procedures 2.5 Human resource requirements are managed in accordance workplace procedures 2.6 Debriefings are conducted with operational plan in accordance workplace procedures
3 Report outcomes of	3.1 Improvements to operational strategies are identified and

strategies

managed in consultation with all stakeholders in accordance workplace procedures

- 3.2 Results of debriefings are reported with operational plan in accordance with workplace procedures
- 3.3 Improvements to operational strategies are implemented and managed with operational plan in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS529 Manage operational strategies for power production.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS054 Manage operational strategies for power production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures and techniques
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- determining and managing operational strategies
- identifying short- and long-term operational strategies
- identifying plant status using data analysis techniques and tools
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- instigating and monitoring operational strategies
- managing generation plant and operating parameters
- managing human resources in power production
- reporting outcomes of power generation production
- utilising stakeholder management techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- identification of power generation plant status
- measurement and analysis systems and procedures, including data collection and analysing techniques
- operational strategy practices
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- stakeholder liaison and management techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS055 Manage permit to work system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage the development, implementation and review of the permit to work system in a power generation facility.

Permits to work are a formal system used to control high-risk activities in power generation facilities, they specify the control measures to be used. They ensure that all hazards and precautions have been considered before any hazardous work begins.

Competency in this unit requires the ability to plan for implementation of permit to work procedures, develop permit to work system and procedures, manage permit to work system and audit permit to work procedures. Individuals will, in general, work as an operator with responsibility for managing the permit to work system in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS028 Coordinate permit to work system

UEPOPS011 Conduct multiple energy source isolation procedures for permit to work

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for implementation of permit to work system

- 1.1** Statistical records are consulted on permit to work implementation in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Requirements for the development of permit to work procedures are identified and confirmed in accordance with legislative requirements and workplace procedures
- 1.4** Key stakeholders and equipment affected by the permit to work system are identified in accordance with workplace procedures
- 1.5** Consultation with key stakeholders to determine contingency plan implementation and timetable of review is carried out in accordance with workplace procedures

2 Develop permit to work system and procedures

- 2.1** Permit to work procedures are planned and developed in accordance with legislative requirements and workplace procedures
- 2.2** Resources are obtained and utilised for development of permit to work system in accordance with workplace procedures
- 2.3** Permit to work procedures are documented and approved in accordance with workplace procedures

3 Implement permit to work system

- 3.1** Permit to work system incidents are identified, managed and recorded in accordance with legislative requirements and workplace procedures
- 3.2** Permit to work incidents are investigated and assessed in accordance with legislative requirements and workplace procedures
- 3.3** Results and recommendations of incident investigations are documented and confirmed with relevant personnel in accordance with legislative requirements and

workplace procedures

4 Audit permit to work procedures

- 4.1** Permit to work system is audited and results are evaluated and managed in accordance with workplace procedures
- 4.2** Audit results are documented and reports, including recommendations, are confirmed with relevant personnel in accordance with legislative requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS502 Manage permit to work system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS055 Manage permit to work system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices and procedures
- conducting and managing audits and reviews of incident reports
- consulting with key stakeholders
- developing and managing permit to work system and procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- planning for implementation of permit to work system
- using data analysis techniques and tools to analyse permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- auditing procedures and techniques
- incident investigation using evaluation techniques
- permit to work systems
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- stakeholder management techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification

- risk control measures
- safe working practices and procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS056 Manage quality control procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage quality control procedures.

Quality control is a process through which a workplace seeks to ensure significant variations in quality are kept to a minimum. Quality control in a power generation facility will focus on procedures intended to ensure that personnel, plant and equipment operate smoothly and efficiently.

Competency in this unit requires the ability to plan for quality control, manage quality control, manage records and audit quality control procedures. Individuals will, in general, work as an operator with responsibility for quality control, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for quality control	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Manufacturers' recommendations and specifications and manuals are interpreted to meet quality control procedures in accordance with Quality Management System (QMS) and workplace procedures 1.3 Plant and equipment testing and inspecting program is managed to determine conformance with manufacturers' recommendations and specifications in accordance with QMS and workplace procedures 1.4 Data is collected to determine cause of variations in accordance with QMS and workplace procedures 1.5 Quality control process improvement tools are used to identify and resolve quality control problems in accordance with QMS and workplace procedures 1.6 Quality process improvement techniques are used to manage work groups in the identification and resolution of quality control variances in accordance with QMS and workplace procedures
2 Monitor quality control	2.1 Monitoring equipment is checked and managed for calibration, and environmental conditions are reviewed and confirmed to ensure reliability and accuracy of test results in accordance with QMS and workplace procedures 2.2 Quality control process improvement measures are implemented and managed in accordance with QMS and workplace procedures 2.3 Deviation and fault data is managed in accordance with QMS and workplace procedures 2.4 Changes in quality performance are actioned in accordance with QMS and workplace procedures 2.5 Independent inspections, tests and audits are managed in accordance with QMS and workplace procedures 2.6 Quality improvement system is monitored and managed

		in accordance with QMS and workplace procedures
3 Manage quality control records	3.1	Calibration records of test equipment is managed in accordance with QMS and workplace procedures
	3.2	Recording of quality control procedure updates are managed in accordance with QMS and workplace procedures
4 Audit quality control procedures	4.1	QMS is audited, and results are evaluated in accordance with QMS and workplace procedures
	4.2	Audit results are documented and report with recommendations is reviewed and confirmed with relevant personnel in accordance with QMS and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS509 Manage quality control procedures.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS056 Manage quality control procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- auditing quality control procedures
- communicating with personnel
- completing quality control documentation
- identifying quality control procedure variances
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- liaising with contractors
- managing quality control, including procedures, processes and techniques
- organising quality control procedure audits, inspections and tests
- performing analysis of Quality Management System (QMS) and quality control procedures
- planning quality control.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- data analysis of quality variances
- manuals
- monitoring equipment, procedures and records
- plant and equipment, location and operating parameters

- quality control procedures, processes and techniques
- QMS
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS057 Manage system restart

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage a power generation system restart after the islanding and shutdown of the system and network.

A restart is the process of restoring an electric power generating facility to operation without relying on an external transmission network. Power generation system restarts allow parts of the power system to be re-energised through black start equipped generation capacity following a black out.

Competency in this unit requires the ability to identify cause for power generating system restart, restore power generating system and document work. Individuals will, in general, work as an operator with responsibility for managing system restarts in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Identify cause for system/network restart

- 1.1** Probable implications of power generation system restart are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Secondary threats to power generation system restart are identified and monitored in accordance with workplace procedures
- 1.4** Power generation capability is evaluated in accordance with workplace procedures
- 1.5** Power generation system configuration is evaluated in accordance with workplace procedures
- 1.6** External information is collated and assessed in accordance with workplace procedures
- 1.7** Probable cause of power generation system shutdown is identified from available information and resources in accordance with workplace procedures
- 1.8** Communication with key stakeholders is established in accordance with workplace procedures
- 1.9** Roles and work tasks are identified in consultation with relevant personnel in accordance with workplace procedures

2 Restore system/network generation

- 2.1** Power generation system restart response is managed in accordance with workplace procedures
- 2.2** Power generation system restart responses are prioritised in accordance with workplace procedures
- 2.3** Contingency management plan, including power generation system restart, is actioned in accordance with workplace procedures
- 2.4** Additional resources are coordinated and directed, as required, in accordance with workplace procedures

- 3 Document work**
- 2.5 Restart plans are monitored, evaluated and adjusted, as required, in accordance with workplace procedures
 - 3.1 Equipment failure or system restart problems are recorded and processed in accordance with workplace procedures
 - 3.2 Feedback from key stakeholders is recorded in accordance with workplace procedures
 - 3.3 Reports are generated and distributed to relevant personnel in accordance with workplace procedures
 - 3.4 Alternative restart plans or recommendations are communicated to relevant personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS437 Manage system restart.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS057 Manage system restart

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and key stakeholders
- determining corrective actions using diagnostic techniques
- documenting completed work using recording procedures
- identifying power generation system restart cause
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- locating power generating plant and equipment
- maintaining power generator unit integrity
- recognising abnormal power generating plant operating conditions
- recognising power generating plant status, including interpreting remote indications of status using data analysis techniques and tools
- restarting and operating power generating plant within design parameters
- restoring power generation system and network generation
- using contingency and restarting plans.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- abnormal power generating plant operating conditions
- arrangements of power production plant, including auxiliary plant and plant operation
- communication with key stakeholders
- contingency and restart plans

- corrective actions using diagnostic techniques
- equipment and generation system restart prerequisites
- manuals
- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS058 Manage work health and safety policy and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to manage the identification of hazards and the assessment and control of risks associated with generating plant and equipment.

Work health and safety (WHS)/occupational health and safety (OHS) is concerned with protecting the wellbeing of all workplace stakeholders from exposure to hazards and risks resulting from activities in power generation facilities. It involves the assessment and mitigation of risks that can cause short- and long-term harm.

Competency in this unit requires the ability to identify hazards, analyse and manage WHS/OHS risks, implement and manage procedures for identifying risks, recommend controls for hazards, identify and manage licensing and certification issues, and review and evaluate risk control measures. Individuals will, in general, work as operators with responsibility for WHS/OHS, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0024 Implement and monitor energy sector WHS policies and procedures

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify hazards

- 1.1** WHS/OHS regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Hazardous situations associated with use of generating plant and equipment are identified, analysed and managed in accordance with workplace procedures
- 1.4** Key stakeholders are identified and consulted in accordance with workplace procedures
- 1.5** WHS/OHS recording and reporting procedures on hazards and risks are reviewed and managed in accordance with workplace procedures

2 Analyse and manage WHS/OHS risks

- 2.1** Risk assessment controls are determined, analysed and managed in consultation with key stakeholders in accordance with workplace procedures
- 2.2** Register of risk control measures, including permits, is developed and managed in accordance with workplace procedures

3 Implement and manage procedures for identifying hazards

- 3.1** Hierarchy of control measures are implemented and managed in accordance with workplace procedures
- 3.2** Workplace monitoring processes are continually managed to eliminate and control risks in accordance with workplace procedures
- 3.3** Risks requiring further controls are identified and managed in accordance with workplace procedures
- 3.4** Management of reporting cycle to key stakeholders is undertaken in accordance with workplace procedures

4 Recommend controls for hazards

- 4.1** Permits to work and access procedures are monitored and managed in liaison with key stakeholders in accordance with workplace procedures

- 4.2 Isolation procedures are implemented and managed to ensure continued safety of all workplace personnel in accordance with workplace procedures
 - 4.3 Maintenance procedures are documented and communicated to all personnel to ensure generating plant and equipment are safe in accordance with workplace procedures
 - 4.4 Modifications to generating plant and equipment are recorded in return to service documentation in accordance with workplace procedures
 - 4.5 Work practices are monitored and modified, as required, for safe operation of generating plant and equipment in accordance with workplace procedures
 - 4.6 Maintenance systems are monitored and evaluated for safe operation of generating plant and equipment in accordance with workplace procedures
- 5 **Identify and manage licensing and certification issues**
 - 5.1 WHS/OHS requirements for plant registration, operator licensing and authorisation are identified and communicated to key stakeholders in accordance with workplace procedures
 - 5.2 Training to meet WHS/OHS regulatory requirements is identified and communicated to key stakeholders in accordance with workplace procedures
 - 5.3 WHS/OHS compliance for operator licensing, registration or authorisation is managed in accordance with workplace procedures
 - 5.4 Records of operator competencies in working with generating plant and equipment are managed in accordance with workplace procedures
- 6 **Review and evaluate risk control measures**
 - 6.1 Risk control measures are reviewed and evaluated, and risk assessments are conducted in accordance with workplace procedures
 - 6.2 Risk control plans are developed and managed in consultation with key stakeholders in accordance with workplace procedures
 - 6.3 Record system is managed for generating plant, equipment and systems of work in accordance with workplace procedures

- 6.4** WHS/OHS improvements are implemented and managed in consultation with key stakeholders in accordance with workplace procedures
- 6.5** WHS/OHS management system is evaluated, reviewed and reported to ensure generating plant safety in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS501 Manage Work Health and Safety policy and procedures.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS058 Manage work health and safety policy and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing work health and safety (WHS)/occupational health and safety (OHS) risks associated with generating plant
- applying WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with key stakeholders
- identifying hazards
- implementing hierarchy of control
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- locating and identifying generating plant and equipment
- managing and supervising staff
- managing controls for hazards associated with maintenance activities
- managing procedures for identifying hazards
- recognising generating plant status
- recording procedures
- reviewing and implementing WHS/OHS procedures
- using hazard identification and risk control techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- generating plant status

- hazard identification and risk control techniques
- hierarchy of control
- licensing and certification requirements, including isolations, access and permits
- management of WHS/OHS records
- manuals
- provision of WHS/OHS training, including competency identification
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- stakeholder management techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS059 Manage, operate and monitor a gas turbine unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the management of an in-service gas turbine unit.

A gas turbine is an internal combustion engine that converts natural gas or other liquid fuels to mechanical energy.

Competency in this unit requires the ability to plan work, operate gas turbine plant, test gas turbine plant, analyse gas turbine plant faults, monitor gas turbine plant and complete all documentation. Individuals will, in general, work as a frontline manager or supervisor, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on gas turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Operate gas turbine plant	2.1 Output is adjusted to achieve required gas turbine operating conditions and demand in accordance with workplace procedures
	2.2 Gas turbine plant is operated within limits of the design in accordance with workplace procedures
	2.3 Gas turbine plant is monitored and observed to detect deviations from operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify gas turbine plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test and analyse gas turbine plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Gas turbine plant is observed for correct operational response in accordance with workplace procedures
	3.3 Gas turbine plant is returned to required operational status upon completion of testing in accordance with workplace procedures
	3.4 Causes of abnormal gas turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
4 Monitor gas turbine plant	4.1 Gas turbine plant is monitored for normal operation and to detect deviations in accordance with workplace

procedures

- 4.2 Relevant personnel are notified when defects are detected in accordance with workplace procedures

5 Complete documentation

- 5.1 Gas turbine plant problems, movements and status are reported in accordance with workplace procedures
- 5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS336 Manage, operate and monitor a gas turbine unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS059 Manage, operate and monitor a gas turbine unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing gas turbine plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- identifying gas turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring gas turbine plant operations
- organising resources
- planning work
- preparing and operating gas turbine plant and equipment
- recognising and responding to abnormal gas turbine plant operating conditions
- testing gas turbine plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production
- gas turbine plant and equipment, location and operating parameters
- gas turbine plant generator types and characteristics, including:

- system components and interaction
- gas turbine operational processes
- gas turbine plant status
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- permit to work system
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS060 Monitor and coordinate the operation of a combined cycle gas turbine unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to simultaneously operate and monitor combined cycle power generation plant. It involves the safe and effective management of energy production to meet demand using a combined cycle gas turbine unit.

Combined cycle plant consists of a gas turbine and associated generator, heat recovery steam generator (HRSG), steam turbine and associated generator. Combined cycle power plant uses both the gas and steam turbines together to produce more electricity from the same fuel.

Competency in this unit requires the ability to plan for plant operation, operate HRSG, operate generator and excitation system, control generation of electrical energy, coordinate unit operations, monitor system/plant, test system/plant operation, analyse system/plant faults and complete all documentation. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS095 Operate and monitor fuel firing plant - gas or oil

UEPOPS101 Operate and monitor HRSG hot gas control system

UEPOPS059 Operate and monitor gas turbine unit

UEPOPS073 Operate and monitor a steam turbine

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for plant operation

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2 Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3 Preoperational checks are carried out on combined cycle plant in accordance with workplace procedures

2 Operate HRSG

- 2.1 Gas turbine exhaust, gas flow and power output are adjusted to achieve required steam flow and conditions in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2 Supplementary firing system is placed into and out of service to maintain steam flow and steam conditions in accordance with workplace procedures
- 2.3 Combined cycle plant is operated within limits of design in accordance with workplace procedures
- 2.4 Combined cycle plant is operated, monitored and observed to detect deviations from required operating conditions in accordance with workplace procedures
- 2.5 Corrective action is taken to rectify abnormalities in combined cycle plant in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Operate generator and excitation system

- 3.1 Generator and excitation system is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3.2 Synchronising requirements are assessed, evaluated and implemented to ensure generator and excitation system stability in accordance with workplace procedures

	3.3	Generator and excitation system is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
4 Control generation of electrical energy	4.1	Generator output is adjusted to meet demand in accordance with operating requirements and workplace procedures
	4.2	Reactive power generation and voltage regulation requirements are assessed to ensure the generator and excitation system is controlled to achieve output in accordance with workplace procedures
	4.3	Generator stabilities and operating limits are assessed, and the generator and excitation system are controlled to maintain those limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.4	Generator cooling systems and limits are monitored and assessed, and excitation system is controlled to maintain those limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
5 Coordinate generator and excitation system operations	5.1	Generator and excitation systems are operated in accordance with power generating plant limitations and workplace procedures
	5.2	Generator and excitation systems are monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	5.3	Causes of abnormal generator and excitation system operating conditions are identified by analysing technical, operational data and information in accordance with workplace procedures
	5.4	Generator and excitation system integrity, personnel safety and continuity of supply are maintained in accordance with workplace procedures
	5.5	Consultation with relevant personnel is undertaken in accordance with workplace procedures
	5.6	Generator and excitation system is operated at efficiency in accordance with workplace procedures
6 Monitor system/plant	6.1	Generator and excitation system and combined cycle

	plant to be monitored is physically identified in accordance with workplace procedures
	6.2 Generator and excitation system and combined cycle plant are monitored for normal operation to detect deviations in accordance with workplace procedures
	6.3 Relevant personnel are notified when defects and abnormal operating conditions are detected in accordance with workplace procedures
7 Test system/plant operation	7.1 Operational tests are performed in accordance with workplace procedures
	7.2 Generator and excitation system and combined cycle plant is observed for correct operational response in accordance with workplace procedures
	7.3 Generator and excitation system and combined cycle plant are returned to operational status on completion of testing in accordance with workplace procedures
8 Analyse system/plant faults	8.1 Causes of abnormal generator and excitation system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	8.2 Generator and excitation system and combined cycle plant integrity and personnel safety are maintained in consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures
	8.3 Relevant personnel are organised for investigation of identified operational abnormalities in accordance with workplace procedures
9 Complete documentation	9.1 Combined cycle plant problems, movements and status are reported in accordance with workplace procedures
	9.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS442 Monitor and coordinate the operation of a combined cycle gas turbine unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS060 Monitor and coordinate the operation of a combined cycle gas turbine unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing generator and excitation system and combined cycle plant for faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational Health and Safety (OHS) requirements, including
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- controlling power generation operations of combined cycle plant and equipment
- coordinating operation of interacting generator and excitation systems
- identifying combined cycle plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- maintaining generator unit integrity
- monitoring generator and excitation system and combined cycle plant
- operating heat recovery steam generator (HRSG)
- organising resources
- planning for combined cycle plant operation
- preparing combined cycle plant and equipment for operation
- responding to abnormal combined cycle plant operating conditions
- testing generator and excitation system and combined cycle plant operation using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- combined cycle plant and equipment, location and operating parameters
- combined cycle plant status
- combined cycle system components and interactions, including generator and system stability
- manuals
- permit to work system
- potential resources
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- steam and gas turbines and generators
- types and characteristics of HRSG
- WHS/OHS requirements, including
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS061 Monitor and implement environmental site plans and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to address the monitoring and implementation of environmental site plans and procedures.

Environmental site planning is the process of meeting legislative and regulatory obligations, identifying risks, determining risk control strategies and responding quickly to incidents.

Competency in this unit requires the ability to plan for quality control, monitor quality control and complete all documentation. Individuals will, in general, work as an operator or technician, in a power generation facility.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Prepare environmental site plan and procedures

- 1.1** Environmental site plans and procedures are identified and examined in accordance with project requirements and workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Environmental risks and impacts are identified for the project in accordance with workplace procedures
- 1.4** Environmental site plans and procedures are selected in accordance with the project requirements and workplace procedures

2 Implement environmental site plan and procedures

- 2.1** Emergency procedures are implemented in accordance with workplace procedures
- 2.2** Environmental activities are carried out in accordance with environmental site plans and workplace procedures
- 2.3** Environmental control procedures are implemented and maintained, and risks are mitigated in accordance with environmental site plans and workplace procedures

3 Review environmental project procedures

- 3.1** Environmental procedures are assessed using feedback from stakeholders and relevant data in accordance with workplace procedures
- 3.2** Environmental procedures are reviewed and rewritten in accordance with workplace procedures

4 Control environmental incidents

- 4.1** Environmental incidents are identified and controlled in accordance with the environmental site plans and workplace procedures
- 4.2** Environmental incidents are recorded and reported in accordance with environmental plan requirements and workplace procedures

5 Monitor and report on application of environmental site plan and procedures

- 5.1** Application of the environmental site plan processes and procedures are monitored and documented in accordance with workplace procedures

- 5.2 Environmental risks and incidents are reported in accordance with workplace procedures
- 5.3 Review of environmental site plan is reported on in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS417 Monitor and implement environmental site plans and procedures.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS061 Monitor and implement environmental site plans and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- managing environmental incidents, including:
 - assessing environmental risks of project, including impacts
 - controlling environmental incidents
 - integrating operational activities into review of environmental procedures
 - monitoring project and environmental site
 - using risk control procedures
- monitoring and reporting on application of environmental plans and procedures
- preparing to implement environmental plan and procedures
- reviewing application of environmental plans and procedures
- working with environmental plans and procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- environmental impact assessments
- environmental site plans and procedures
- identification of environmental risks and impact

- power generation plant and equipment, location and operating parameters
- project planning methods and techniques
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS062 Monitor and maintain civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor and conduct maintenance to ensure the integrity of power generation civil assets.

Civil asset maintenance strategies are used to preserve and extend the service life of infrastructure. Civil assets may include infrastructure such as water treatment facilities, sewer pipelines, roads, utility grids, bridges, tunnels and railways.

Competency in this unit requires the ability to plan work, monitor civil assets, maintain civil assets and complete all work. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work

1.1

Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and

specifications, environmental requirements and workplace procedures are identified, applied and monitored

1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures

1.3 Resources are obtained and inspected for compliance in accordance with workplace procedures

1.4 Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures

1.5 Work is sequenced and prioritised in accordance with workplace procedures

2 Monitor civil assets

2.1 Monitoring frequency of civil assets is determined in accordance with workplace procedures

2.2 Check list for civil asset monitoring is maintained in accordance with workplace procedures

2.3 Abnormal events or conditions are reported to relevant personnel in accordance with workplace procedures

3 Maintain civil assets

3.1 Maintenance of civil assets is undertaken in accordance with workplace procedures

3.2 Relevant tools, equipment and plant required to maintain civil assets are utilised in accordance with manufacturers' specifications and workplace procedures

4 Complete work

4.1 Maintenance work is completed and relevant personnel notified in accordance with workplace procedures

4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures

4.3 Civil asset maintenance tools and equipment are maintained and stored in accordance with manufacturers' recommendations and specifications, and workplace procedures

4.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS327 Monitor and maintain civil assets.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS062 Monitor and maintain civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- identifying and selecting equipment and materials for civil asset maintenance work
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- maintaining civil assets
- monitoring civil assets
- planning work
- storing and maintaining tools and equipment
- using monitoring and maintenance procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydroelectric generation plant
- layout of worksite and civil assets
- manuals
- monitoring and maintenance techniques
- principles of hydroelectric generation
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS063 Monitor and maintain wind farm civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor and conduct preventative and remedial maintenance to ensure the integrity of civil assets associated with a wind farm.

Wind farm civil assets include infrastructure such as water treatment facilities, sewer pipelines, roads, utility grids, bridges, tunnels and railways. Civil asset maintenance in a wind power generation system involves the use of strategies to preserve and extend the service life of infrastructure.

Competency in this unit requires the ability to plan work, monitor wind farm civil assets, maintain wind farm civil assets and complete all work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures
	1.3 Resources are identified, obtained and inspected for compliance in accordance with workplace procedures
	1.4 Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures
	1.5 Work is sequenced and prioritised in accordance with workplace procedures
2 Monitor wind farm civil assets	2.1 Inspections of wind farm civil assets are completed in accordance with workplace procedures
	2.2 Inspections of wind farm civil assets are reported in accordance with workplace procedures
	2.3 Defects in wind farm civil assets are reported in accordance with workplace procedures
3 Maintain wind farm civil assets	3.1 Maintenance of wind farm civil assets is undertaken in accordance with workplace procedures
	3.2 Appropriate tools, equipment or plant required to maintain wind farm civil assets are utilised in accordance with manufacturers' recommendations and specifications, and workplace procedures
	3.3 Defects are repaired in accordance with workplace procedures
4 Complete work	4.1 Maintenance work is completed and relevant personnel notified in accordance with workplace procedures
	4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
	4.3 Wind farm civil asset maintenance tools and equipment are maintained and stored in accordance with

manufacturers' recommendations and specifications, and workplace procedures

- 4.4** Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS358 Monitor and maintain wind farm civil assets.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS063 Monitor and maintain wind farm civil assets

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- clearing waste from work area
- communicating with personnel
- completing work
- identifying and selecting equipment and materials
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and maintaining wind farm civil assets using monitoring and maintenance procedures
- planning and preparing for work
- storing and maintaining civil asset tools and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of wind farm power plant, including wind turbine types and characteristics
- layout of power generation wind farm facility and associated civil assets
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures

- risk control measures
- safe working practices
- wind farm civil asset monitoring and maintenance techniques
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS064 Monitor climatic conditions for renewable energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor weather and climate conditions for renewable energy production. It also includes taking suitable preventative actions to ensure the safety of personnel, power generation plant and equipment in adverse weather conditions.

Renewable energy can be generated from natural resources such as sun light, wind, rain, tides and geothermal heat which are naturally replenished.

Competency in this unit requires the ability to interpret weather and climate information, carry out preventative actions, monitor weather and climate during adverse conditions, return to normal operations and complete all documentation. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Interpret weather and climate information	1.1 Weather and climate information, including warnings, are monitored to determine conditions in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Potential variations in weather and climate conditions are anticipated and assessed for warnings, weather patterns and historical experience in accordance with workplace procedures 1.4 Impact of weather and climate on renewable energy plant, equipment and civil assets are identified in accordance with workplace procedures 1.5 Stakeholders and key personnel are informed of anticipated impact of weather and climate on renewable energy plant, equipment and civil assets in accordance with workplace procedures
2 Carry out preventative actions	2.1 Preventative actions are identified in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Stakeholders and key personnel are consulted in the development of preventative actions in accordance with workplace procedures 2.3 Preventative actions are reviewed to ensure availability of resources, safety of personnel, renewable energy plant and equipment in accordance with workplace procedures 2.4 Actions to minimise loss and damage of renewable energy plant, equipment and civil assets are implemented in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.5 Actions to ensure safety of personnel are implemented in accordance with workplace procedures
3 Monitor weather and climate during adverse conditions	3.1 Weather and climate information, including warnings, are continually monitored to determine ongoing suitability of preventative actions in accordance with

		workplace procedures
	3.2	Preventative actions are adjusted and revised in relation to weather and climatic changes in accordance with workplace procedures
4 Return to normal operations	4.1	Weather and climate information, including warnings, are monitored to determine when normal and safe weather conditions have returned in accordance with workplace procedures
	4.2	Renewable energy plant, equipment and civil assets are inspected for damage in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.3	Renewable energy plant, equipment and civil assets are placed for service in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.4	Preventative actions are reviewed and recommendations developed to improve processes in accordance with workplace procedures
5 Complete documentation	5.1	Documentation is updated in accordance with workplace procedures
	5.2	Completed documentation is forwarded to authorised personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS359 Monitor climatic conditions for renewable

energy production.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS064 Monitor climatic conditions for renewable energy production

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- carrying out preventative actions
- communicating with stakeholders and key personnel
- completing documentation using recording procedures
- identifying renewable energy plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting weather and climate conditions and possible impact on renewable energy plant, equipment and civil assets using data analysis techniques and tools
- monitoring weather and climate during adverse conditions
- organising resources
- preparing renewable energy plant and/or equipment for operation
- using manuals.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of renewable energy power production plant
- climate and weather patterns in area
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- renewable energy plant and equipment, location and operating parameters

- renewable energy plant status
- weather and climate conditions and possible impact on renewable energy plant, equipment and civil assets
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS065 Monitor implementation of quality control for production and maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor the implementation of production and maintenance quality control procedures at a power generation facility.

Quality control is a process used to ensure variations in quality are kept to a minimum. Quality control in a power generation facility will focus on a set of processes and procedures intended to ensure that personnel, plant and equipment operate in accordance with workplace procedures.

Competency in this unit requires the ability to plan for quality control, monitor quality control and complete all documentation. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS047 Maintain quality systems within the team

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for quality control	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Quality control parameters are established for power generation production and maintenance in accordance with workplace procedures
	1.3 Quality control process improvement techniques are used in the identification and resolution of quality variances in power generation in accordance with workplace procedures
2 Monitor quality control	2.1 Monitoring equipment is checked for calibration, and environmental conditions are confirmed to ensure reliability and accuracy of test results in accordance with workplace procedures,
	2.2 Quality control procedures for production and maintenance in power generation is monitored in accordance with workplace procedures
	2.3 Deviation and fault data collected and reported in accordance with workplace procedures
3 Complete documentation	3.1 Calibration records of test equipment is maintained in accordance with workplace procedures
	3.2 Documentation is completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS416 Monitor implementation of quality control for production and maintenance.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS065 Monitor implementation of quality control for production and maintenance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and includes:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- conducting checks and inspections
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring quality control processes and techniques
- planning quality control
- undertaking data analysis
- working with quality control procedures, processes and techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- data analysis
- inspection techniques
- manuals
- power generation plant and equipment, location and operating parameters
- quality control procedures, processes and techniques

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS066 Monitor power generation plant reliability

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor power generating plant reliability through data assessment.

Data is collected and assessed to accurately evaluate the impact of power generating plant reliability in the operation of power generation facilities.

Competency in this unit requires the ability to collect data, perform calculations, evaluate and analyse information and produce reports, and complete work. Individuals will, in general, work under supervision as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Collect data	1.1 Information and data is collected in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Generating plant is identified and status established in accordance with workplace procedures 1.4 Tools and equipment are identified and acquired in accordance with workplace procedures 1.5 Specialist assistance or equipment is obtained in accordance with workplace procedures 1.6 Information collected is recorded and ranked in accordance with workplace procedures
2 Perform calculations	2.1 Performance calculations are undertaken in accordance with workplace procedures 2.2 Calculations are checked for accuracy in accordance with workplace procedures
3 Analyse information	3.1 Technical and operational information is analysed to identify abnormal generating plant operating conditions in accordance with workplace procedures 3.2 Causes of abnormal generating plant conditions are identified in accordance with workplace procedures 3.3 Generating plant integrity is maintained in consultation with relevant personnel and operational documentation in accordance with workplace procedures 3.4 Specialist assistance is determined in accordance with workplace procedures
4 Produce report and complete work	4.1 Information and data are documented in accordance with workplace procedures 4.2 Reports are produced in accordance with workplace procedures 4.3 Actions to rectify generating plant loss of reliability are ranked, and recommendations are made to relevant

personnel in accordance with workplace procedures

- 4.4** Implementation of recommendations is monitored to ensure generating plant reliability in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS510 Monitor power generation plant reliability.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS066 Monitor power generation plant reliability

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - site safety procedures
- collecting data
- communicating with personnel
- determining generation plant reliability performance
- evaluating and analysing information and data
- identifying generating plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- performing calculations
- producing reports and completing work
- recording and analysing data using analysis techniques and tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- calculation methods
- data collection and analysing techniques
- generation plant and equipment, location and operating parameters
- generation plant monitoring processes and procedures
- generation plant status

- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - site safety procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS067 Monitor the implementation of under frequency load shedding

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to implement and monitor under frequency load shedding for isolated and integrated generation network systems.

Under frequency load shedding is the deliberate shutdown of electric power in a part or parts of the power system to prevent the failure of the entire system. It is generally caused by overloading a power source or problems with a prime mover such as a turbine.

Competency in this unit requires the ability to plan work, set under frequency load shedding, respond to under frequency load shedding operation and complete all documentation. Individuals will, in general, work as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for load shedding	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Checks are carried out on under frequency load shedding plant in accordance with workplace procedures
2 Set under frequency load shedding	2.1 Individual load source data is collated, assessed, evaluated and prioritised in accordance with workplace procedures
	2.2 Data is assessed against trends to determine suitability for load shed selection in accordance with workplace procedures
	2.3 Load data is grouped and summed into stages of priority to match generator and unit output in accordance with workplace procedures
	2.4 Selected load shedding is implemented in accordance with workplace procedures
	2.5 Staged load data is monitored and recalculated to detect deviations from parameters in accordance with workplace procedures
3 Respond to under frequency load shedding operation	3.1 Load data is monitored and selections adjusted to maintain values within permissible parameters in accordance with workplace procedures
	3.2 Stakeholders are consulted and corrective action determined for load shedding deviations in accordance with workplace procedures
4 Complete documentation	4.1 Load shedding status is reported in accordance with workplace procedures
	4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS355 Monitor the implementation of under frequency load shedding.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS067 Monitor the implementation of under frequency load shedding

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing power generation plant and system using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with stakeholders
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting remote indications of power generation plant status
- monitoring operation of power generation plant and equipment
- planning and preparing power generation plant and equipment for operation
- recognising abnormal power generation plant operating conditions and determining corrective actions
- responding to under frequency load shedding operations including:
 - forecasting system load shifting
- setting load shedding within operational parameters
- scheduling load shedding to match generator output completing documentation
- using manuals
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including power generation plant operating parameters and status
- manuals

- permit to work system
- power generation under frequency load shedding plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- under frequency load shedding system components and interactions, including:
 - generator capacity
 - load shedding schemes
 - stakeholder communication
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS068 Operate a hydro generator synchronous condenser pump unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to start-up, maintain a steady state of running and then shutdown a hydro unit operating either as a generator, synchronous condenser or pump.

Using synchronous condenser operations in hydro generation facilities can improve the quality of electric power being supplied, and it assists in stabilising the network during faults.

Competency in this unit requires the ability to plan and prepare work and to operate, test, analyse and report on hydro generator synchronous condenser plant. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Turbine running up and loading schedule are ascertained from relevant documentation in accordance with workplace procedures 1.4 Hydro generator synchronous condenser plant inspection, preoperational tests and field preparation for service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Hydro generator synchronous condenser plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of hydro generator synchronous condenser plant is determined in accordance with workplace procedures
2 Operate hydro generator synchronous condenser plant	2.1 Hydro generator synchronous condenser plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Hydro generator synchronous condenser plant is monitored to detect deviations from normal operating conditions, in accordance with workplace procedures 2.3 Corrective actions are taken to rectify abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test hydro generator synchronous condenser plant operation	3.1 Tests are performed on hydro generator synchronous condenser plant in accordance with workplace procedures 3.2 Hydro generator synchronous condenser plant is returned to required operational status upon completion

- of testing in accordance with workplace procedures
- | | | |
|---|------------|--|
| 4 Analyse hydro generator plant faults | 4.1 | Cause of abnormal hydro generator synchronous condenser plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures |
| | 4.2 | Hydro generator synchronous condenser plant integrity and personnel safety is maintained through consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures |
| | 4.3 | Relevant personnel are notified when defects are detected in accordance with workplace procedures |
| 5 Complete documentation | 5.1 | Plant problems, movements and status are reported in accordance with workplace procedures |
| | 5.2 | Documentation is updated in accordance with workplace procedures |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS335 Operate a hydro generator synchronous condenser pump unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS068 Operate a hydro generator synchronous condenser pump unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - risk control measures
 - emergency procedures
 - safe working practices
- communicating with personnel
- completing workplace documentation
- identifying and responding to abnormal plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting hydro generator synchronous condenser pump unit plant operations
- operating hydro generator synchronous condenser pump unit plant
- organising resources
- planning hydro generator synchronous condenser pump unit plant work
- recognising hydro turbine generator/pump unit plant status
- reporting on hydro generator pump unit plant status
- testing hydro turbine generator synchronous condenser pump unit plant operationally using diagnostic and data analysis techniques
- utilising measuring and testing instruments to identify faults and abnormalities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- hydro turbine generator synchronous condenser pump unit plant and equipment, location and

- operating parameters
- hydro turbine generator synchronous condenser pump unit plant operation
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS069 Operate air conditioning plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and inspect an air conditioning plant.

Air conditioning in power generation facilities refers to systems that cool air and remove humidity from areas filled with heat producing plant and equipment. A complete system of heating, ventilation, and air conditioning is referred to as heating, ventilation and air conditioning (HVAC).

Competency in this unit requires the ability to plan and prepare work; operate, test, analyse and report on air conditioning plant and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine air conditioning plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection for service is carried out in accordance with site requirements workplace procedures
	1.5 Air conditioning plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of air conditioning plant is determined in accordance with workplace procedures
2 Conduct operation of air conditioning plant	2.1 Air conditioning plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Air conditioning plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify air conditioning plant abnormalities in accordance with workplace procedures
	2.4 Air conditioning plant to be removed from service is identified and removed in accordance with workplace procedures
	2.5 Corrective actions are taken when abnormalities are identified during removal of air conditioning plant from service in accordance with workplace procedures
3 Test plant operation	3.1 Tests are performed on air conditioning plant in accordance with workplace procedures

	3.2	Air conditioning plant is observed for operational response in accordance with workplace procedures
	3.3	Air conditioning plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse plant faults	4.1	Causes of abnormal air conditioning plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Air conditioning plant integrity and personnel safety is maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect plant	5.1	Air conditioning plant to be monitored or inspected is physically identified in accordance with workplace procedures
	5.2	Air conditioning plant is monitored and/or inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Air conditioning plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS243 Operate air conditioning plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS069 Operate air conditioning plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- operating air conditioning plant including:
 - applying permit to work system
 - completing documentation
 - interpreting technical drawings and manuals
 - monitoring and inspecting air conditioning plant
 - planning air conditioning work
 - reporting on air conditioning plant status
 - testing air conditioning plant using diagnostic and data analysis techniques
 - using manuals
 - utilising measuring and testing instruments to identify faults and abnormalities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- air conditioning plant and equipment, location and operating parameters
- air conditioning plant operations
- arrangements of power production plant
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safety and hazard precautions associated with air conditioning plant
- test and fault-finding techniques
- WHS/OHS regulations, including:
 - risk control measures
 - safe working practices
 - emergency procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS070 Operate and monitor a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor an in-service boiler unit capable of supplying steam.

Boilers are used to create steam by applying heat to water, the steam expands and turns the turbines and these in turn drive the generators in power generation facilities.

Competency in this unit requires the ability to plan work, operate boiler unit plant, test boiler unit plant, analyse boiler unit plant faults, monitor and inspect boiler unit and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on boiler unit plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Operate boiler unit plant	2.1 Combustion is established and fuel consumption at minimum levels is supported in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Fuel and air feed flows are adjusted to achieve required steam conditions, demand and observation of operating requirements in accordance with workplace procedures
	2.3 Boiler unit plant is operated within the limits of the design in accordance with workplace procedures
	2.4 Boiler unit plant is monitored and observed to detect deviations from required operating conditions in accordance with workplace procedures
	2.5 Corrective actions are taken to rectify boiler unit abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test boiler unit plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Boiler unit plant is observed for correct operational response in accordance with workplace procedures
	3.3 Boiler unit plant is returned to required operational status upon completion of test in accordance with workplace procedures
4 Analyse boiler unit plant faults	4.1 Causes of abnormal boiler unit plant operating conditions are identified by analysing technical and operational information in accordance with workplace

procedures,

- 4.2** Boiler unit plant integrity and personnel safety is maintained in consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures,

5 Monitor boiler unit plant

- 5.1** Boiler unit plant is monitored for normal operation and to detect deviations in accordance with workplace procedures
- 5.2** Relevant personnel are notified when defects are detected in accordance with workplace procedures

6 Complete documentation

- 6.1** Boiler unit plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
- 6.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS339 Operate and monitor a boiler unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS070 Operate and monitor a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing boiler unit plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying boiler unit plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- operating boiler plant and equipment
- organising resources
- preparing and planning work
- recognising and responding to abnormal boiler unit plant operating conditions
- testing boiler unit plant operationally using diagnostic and test techniques
- utilising permit to work system
- working with boiler unit plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- boiler unit plant and equipment, location and operating parameters
- boiler unit plant operation processes

- boiler unit plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS071 Operate and monitor a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate an in-service heat recovery steam generator (HRSG). Operation of the HRSG, with or without supplementary firing, will be required through the full range of output, up to and including the maximum continuous rating.

A HRSG is a heat exchanger that retrieves heat from hot gas streams which is then supplied to steam turbines to generate additional electrical power.

Competency in this unit requires the ability to plan work, carry out operation of HRSG system, test HRSG operation, analyse HRSG system faults, inspect and monitor HRSG system and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS101 Operate and monitor HRSG hot gas control system

UEPOPS138 Start and run up a gas turbine

UEPOPS141 Start up a heat recovery steam generator unit

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3 Operational checks are carried out on HRSG plant in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Operate HRSG plant

- 2.1 Gas turbine exhaust flow and power output are adjusted to achieve steam flow conditions in accordance with workplace procedures
- 2.2 Supplementary HRSG firing system is placed into an out-of-service to maintain design steam flow and conditions in accordance with workplace procedures
- 2.3 Monitoring and control of HRSG drum level, feedwater flow, steam temperature, pressure and flow are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4 HRSG plant is operated within limits of design in accordance with workplace procedures
- 2.5 Corrective action is taken to rectify HRSG abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Monitor and analyse HRSG plant

- 3.1 HRSG plant to be monitored is identified in accordance with workplace procedures
- 3.2 HRSG plant is monitored for normal operation and to detect deviations from required operating conditions in accordance with workplace procedures

	3.3	HSRG plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	3.4	Relevant personnel are notified when defects are detected in accordance with workplace procedures
	3.5	Causes of abnormal HRSR plant operating conditions are identified by analysing relevant technical and operational information in accordance with workplace procedures,
4 Test HSRG plant operation	4.1	Operational tests are performed in accordance with workplace procedures
	4.2	HSRG plant is observed for correct operational response in accordance with workplace procedures
	4.3	HSRG plant is returned to required operational status upon completion of testing in accordance with workplace procedures
5 Complete documentation	5.1	HSRG plant problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS433 Operate and monitor a heat recovery steam generator unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS071 Operate and monitor a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing system faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying heat recovery steam generator (HRSG) plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- operating and monitoring HRSG plant and equipment
- organising resources
- preparing HRSG plant and equipment for operation
- recognising and responding to abnormal HRSG plant operating conditions
- testing plant operation using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- HRSG plant and equipment, location and operating parameters
- manuals
- operation of HRSG plant and equipment

- operational testing of HRSG plant, including HRSG efficiency
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS072 Operate and monitor a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor in-service hydro turbines. Turbines are a basic component in most methods of generating electricity in hydro generation power facilities.

Competency in this unit requires the ability to plan work, operate hydro turbine plant, test hydro turbine plant, analyse hydro turbine plant faults, monitor and inspect hydro turbine plant and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator. Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisites

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and

	workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Hydro turbine run up and loading schedule are confirmed from relevant documentation in accordance with workplace procedures
	1.4 Inspection, preoperational tests and field preparations for hydro turbine plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Hydro turbine plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of hydro turbine plant is determined in accordance with workplace procedures
2 Operate hydro turbine plant	2.1 Output is adjusted to achieve required hydro turbine operating conditions and demand in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Hydro turbine plant is operated within limits of design in accordance with workplace procedures
	2.3 Hydro turbine plant is monitored and observed to detect deviations from required operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify hydro turbine abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test hydro turbine plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Hydro turbine plant is observed for correct operational response in accordance with workplace procedures
	3.3 Hydro turbine plant is returned to required safe operational status upon completion of testing in

		accordance with workplace procedures
4 Analyse hydro turbine plant faults	4.1	Cause of abnormal hydro turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Actions necessary to rectify faults are correctly determined in accordance with workplace procedures
	4.3	Hydro turbine plant integrity and personnel safety is maintained in consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect hydro turbine plant	5.1	Hydro turbine plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Hydro turbine plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS360 Operate and monitor a hydro turbine.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS072 Operate and monitor a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing hydro turbine plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- coordinating remote operation of equipment to maintain hydro turbine plant integrity
- identifying hydro turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring and inspecting hydro turbine plant operation
- operating hydro turbine unit and equipment under the influence of high water pressures or flows
- organising resources
- preparing and planning work
- recognising and responding to abnormal hydro turbine plant operating conditions
- testing hydro turbine plant operationally
- using diagnostic and testing techniques
- using permit to work system
- working with hydro turbine plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydro power production plant

- hydro turbine plant and equipment, location and operating parameters inclusive of the influence of high water pressure and flows
- hydro turbine plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS073 Operate and monitor a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor an in-service steam turbine.

A steam turbine extracts thermal energy from pressurised steam and is particularly suited to driving an electrical generator as the high-pressure steam is used to turn electricity generators at elevated speed.

Competency in this unit requires the ability to plan work, operate steam turbine plant, test steam turbine plant, analyse steam turbine plant faults, monitor and inspect steam turbine and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on steam turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Operate steam turbine plant	2.1 Steam turbine output is adjusted to meet demand in accordance with workplace procedures
	2.2 Steam turbine plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.3 Steam turbine plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify steam turbine plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test steam turbine plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Steam turbine plant is observed for correct operational response in accordance with workplace procedures
	3.3 Steam turbine plant is returned to required operational status upon completion of test in accordance with workplace procedures
4 Analyse steam turbine faults	4.1 Causes of abnormal steam turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Steam turbine plant integrity and personnel safety is maintained in consultation with relevant personnel,

		technical and operational documentation in accordance with workplace procedures
5 Monitor steam turbine plant	5.1	Steam turbine plant is monitored for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Steam turbine plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS340 Operate and monitor a steam turbine.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS073 Operate and monitor a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing steam turbine plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying steam turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting steam turbine plant operation
- operating steam turbine plant and equipment
- organising resources
- preparing and planning work
- recognising and responding to abnormal steam turbine plant operating conditions
- testing steam turbine plant operationally using diagnostic and test techniques
- utilising permit to work system
- working with steam turbine plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- steam turbine operational processes
- steam turbine plant and equipment, location and operating parameters
- steam turbine plant status
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS075 Operate and monitor a.c. electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor the local and remote operation of alternating current (a.c.) electrical systems, including switchgears, switchboards, distribution systems and transformers.

The main function of electrical systems in power generating facilities is to distribute electrical power to system components and to provide electrical protection for power sources and for the components.

Competency in this unit requires the ability to plan switching operations work; carry out operation of switchgear and switchboards; test switchgears and equipment operation; analyse a.c. electrical system, switchgear and equipment faults; inspect and monitor a.c. electrical system and switchboards and the complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for switching operations

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine a.c. electrical system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Equipment inspections, preoperational checks and preparations for a.c. electrical system service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Switchboard and electrical equipment operational prerequisites and switching sequences are established in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Carry out operation of switchgear and switchboards

- 2.1** Operation of switchgear is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Isolation, removal and reinstatement of switchgear, switchboards and rectification system is carried out, in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Paralleling and balancing requirements are assessed to meet a.c. electrical system stability in accordance with workplace procedures
- 2.4** Rectification system is operated, isolated and reinstated in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test switchgear and equipment operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Switchgear and equipment are observed for correct operational response in accordance with workplace

		procedures
	3.3	Switchgear equipment is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse a.c. electrical system, switchgear and equipment faults	4.1	Causes of abnormal a.c. electrical system and switchgear operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	a.c. electrical system and switchgear plant integrity and personnel safety are maintained in consultation with relevant personnel, technical and operational documentation in accordance with workplace procedures
5 Inspect and monitor a.c. electrical system and switchboards	5.1	a.c. electrical system and switchgear is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when a.c. electrical system defects and abnormal operating conditions are detected in accordance with workplace procedures
6 Complete documentation	6.1	a.c. electrical system equipment problems and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS405 Operate and monitor a.c. electrical systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS075 Operate and monitor a.c. electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing equipment, alternating current (a.c.) electrical system and protection faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- conducting switching operations
- identifying a.c. electrical system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting equipment, a.c. electrical system and protection operation
- operating switchgear and equipment
- organising resources
- preparing a.c. electrical system plant and equipment for operation
- recognising and responding to abnormal a.c. electrical system plant operating conditions
- testing a.c. electrical system plant operationally using diagnostic and test techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- a.c. electrical system plant and equipment, location and operating parameters
- a.c. electrical system plant status

- arrangements of power production plant
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- switchgear - operation, isolation and earthing
- switching practices and procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS076 Operate and monitor air conditioning plant and ventilation systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor air conditioning plant, ventilation systems and associated equipment.

Air conditioning is used to cool and dehumidify a variety of plant that is heat producing in power generation facilities. Ventilation is the process of changing or replacing air to control temperatures or remove a combination of moisture, odour, smoke, heat, dust, airborne bacteria, carbon dioxide or to replenish oxygen.

Competency in this unit requires the ability to plan work, operate and monitor air conditioning plant and ventilation systems, test air conditioning plant and ventilation system operations, identify air conditioning plant and ventilation system faults, monitor and inspect air conditioning plant and ventilation system, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes. Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine air conditioning plant and ventilation system status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for air conditioning plant and ventilation system service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Air conditioning plant and ventilation system operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence and air conditioning plant and ventilation system requirements for operation are determined in accordance with workplace procedures
2 Perform operation and monitoring of air conditioning equipment and ventilation systems	2.1 Air conditioning plant and ventilation system is operated and shut down in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Air conditioning plant and ventilation system is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Air conditioning plant and ventilation system performance and quality are monitored, including temperature and airflow humidity, in accordance with workplace procedures 2.4 Corrective actions are taken to rectify abnormalities in accordance with workplace procedures,

3 Test air conditioning and ventilation system plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Air conditioning plant and ventilation system is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Identify air conditioning and ventilation system plant faults	4.1 Causes of abnormal air conditioning and ventilation system plant operating conditions are identified by analysis of technical and operational information in accordance with workplace procedures
	4.2 Air conditioning plant and ventilation system integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect air conditioning and ventilation system plant	5.1 Air conditioning plant and ventilation system is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2 Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1 Air conditioning plant and ventilation system problems, movements and status are reported in accordance with workplace procedures
	6.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS309 Operate and monitor air conditioning plant and ventilation systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS076 Operate and monitor air conditioning plant and ventilation systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying air conditioning plant and ventilation system status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting air conditioning plant and ventilation system
- operating air conditioning plant and ventilation system, including temperature and air flow using data analysis techniques and tools
- operating and monitoring air conditioning plant, equipment and ventilation system
- organising resources
- preparing air conditioning plant and ventilation system for operation
- preparing and planning work
- recognising and responding to abnormal faults in air conditioning plant and ventilation system operating conditions
- testing air conditioning plant and ventilation system operation using diagnostic testing techniques and procedures
- utilising repair techniques and procedures
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- air conditioning and ventilation system plant status
- arrangements of power production plant
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- plant and equipment, location and operating parameters, including:
 - air conditioner systems
 - ventilation systems
 - refrigerant gases
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS077 Operate and monitor alkalinity reduction plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor alkalinity reduction plant which includes cooling tower water dosing equipment.

Alkalinity is a measure of the bicarbonates and carbonates in water, i.e. a measure of limestone content in water. Alkalinity can affect the chlorine residual in power generation plant effluent.

Competency in this unit requires the ability to plan work, operate alkalinity reduction plant, test alkalinity reduction plant, analyse alkalinity reduction plant faults, monitor and inspect alkalinity reduction plant and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine alkalinity reduction plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for alkalinity reduction plant service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Alkalinity reduction plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of alkalinity reduction plant is determined in accordance with workplace procedures
2 Operate alkalinity reduction plant	2.1 Alkalinity reduction plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Alkalinity reduction plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify abnormalities in alkalinity reduction plant in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 Alkalinity reduction plant is identified and removed from service in accordance with workplace procedures
3 Test alkalinity reduction plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Alkalinity reduction plant is observed for operational

		response in accordance with workplace procedures
	3.3	Alkalinity reduction plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse alkalinity reduction plant faults	4.1	Causes of abnormal alkalinity reduction plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Alkalinity reduction plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect alkalinity reduction plant	5.1	Alkalinity reduction plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Alkalinity reduction plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS322 Operate and monitor alkalinity reduction plant.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS077 Operate and monitor alkalinity reduction plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing alkalinity reduction plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - chemical use and hazards
 - emergency procedures
 - risk control measures
 - safe work practices, including use of safety data sheets (SDS)
- communicating with personnel
- completing documentation
- identifying alkalinity reduction plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting alkalinity reduction plant operation
- operating alkalinity reduction plant
- organising resources
- planning and preparing work
- preparing alkalinity reduction plant and equipment for operation
- recognising and responding to abnormal alkalinity reduction plant operating conditions
- testing alkalinity reduction plant operations using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- alkalinity reduction plant and equipment, location and operating parameters, including supervisory, alarm, protection and control equipment

- alkalinity reduction plant status
- arrangements of power production plant
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - chemical use and hazards
 - emergency procedures
 - risk control measures
 - safe work practices, including use of SDS
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS078 Operate and monitor an internal combustion dual fuel reciprocating engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor internal combustion dual fuel reciprocating engines.

An internal combustion dual fuel reciprocating engine is fed with fossil fuels. Internal combustion dual fuel reciprocating engines in the form of combustion turbines drive the largest electric generators.

Competency in this unit requires the ability to plan work, operate internal combustion dual fuel reciprocating engine plant, change fuel type during operation, test internal combustion dual fuel reciprocating engine plant operations, analyse internal combustion dual fuel reciprocating engine plant faults, monitor and inspect internal combustion dual fuel reciprocating engine plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generating facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine internal combustion dual fuel reciprocating engine plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection and field preparations for internal combustion dual fuel reciprocating engine plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Internal combustion dual fuel reciprocating engine plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of internal combustion dual fuel reciprocating engine plant is determined in accordance with workplace procedures

2 Operate internal combustion dual fuel reciprocating engine plant

- 2.1** Internal combustion dual fuel reciprocating engine plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Internal combustion dual fuel reciprocating engine plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify internal combustion dual fuel reciprocating engine plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4** Changeover of fuel type is monitored and observed to

		detect deviations from expected results in accordance with workplace procedures
3 Test internal combustion dual fuel reciprocating engine plant operation	3.1	Operational tests are performed in accordance with workplace procedures
	3.2	Internal combustion dual fuel reciprocating engine plant is observed for correct operational response in accordance with workplace procedures
4 Analyse internal combustion dual fuel reciprocating engine plant faults	4.1	Cause of abnormal internal combustion dual fuel reciprocating engine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Internal combustion dual fuel reciprocating engine plant integrity and personnel safety is maintained and in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect internal combustion dual fuel reciprocating engine plant	5.1	Internal combustion dual fuel reciprocating engine plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Internal combustion dual fuel reciprocating engine plant problems, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation

Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS248 Operate and monitor an internal combustion dual fuel reciprocating engine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS078 Operate and monitor an internal combustion dual fuel reciprocating engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing internal combustion dual reciprocating engine plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- changing fuel type during operation
- communicating with personnel
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying internal combustion dual reciprocating engine plant status
- interpreting manuals
- monitoring and inspecting internal combustion dual reciprocating engine plant operations
- operating dual fuel engines
- preparing and planning work
- preparing internal combustion dual reciprocating engine plant and equipment for operation
- recognising and responding to abnormal internal combustion dual reciprocating engine plant operating conditions
- testing internal combustion dual reciprocating engine plant operationally using diagnostic and testing techniques
- utilising fuel changeover equipment and systems
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- internal combustion dual reciprocating engine plant and equipment, location and operating parameters
- internal combustion dual reciprocating engine plant status, including fuel changeover equipment
- internal combustion reciprocating engine types and characteristics
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS079 Operate and monitor an internal combustion single fuel reciprocating engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor single fuel internal combustion reciprocating engines.

Competency in this unit requires the ability to plan work, operate internal combustion single fuel reciprocating engine plant, test internal combustion single fuel reciprocating engine plant operations, analyse internal combustion single fuel reciprocating engine plant faults, monitor and inspect internal combustion single fuel reciprocating engine plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generating facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine single fuel reciprocating engine plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for single fuel reciprocating engine plant service is carried out in accordance with manufacturers' specifications and workplace procedures 1.5 Single fuel reciprocating engine plant operational prerequisites are established in accordance with manufacturers' specifications and workplace procedures 1.6 Sequence for recommissioning of single fuel reciprocating engine plant is determined to suit existing circumstances in accordance with workplace procedures
2 Operate single fuel reciprocating engine plant	2.1 Single fuel reciprocating engine plant is operated in accordance with manufacturers' specifications and workplace procedures 2.2 Single fuel reciprocating engine plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify abnormalities in accordance with manufacturers' specifications and workplace procedures
3 Test single fuel reciprocating engine plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Single fuel reciprocating engine plant is observed for correct operational response in accordance with workplace procedures 3.3 Relevant personnel are notified when defects are

		detected in accordance with workplace procedures
4 Analyse single fuel reciprocating engine plant faults	4.1	Causes of abnormal single fuel reciprocating engine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Single fuel reciprocating engine plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect single fuel reciprocating engine plant	5.1	Single fuel reciprocating engine plant is monitored and inspected to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Single fuel reciprocating engine plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS247 Operate and monitor an internal combustion single fuel reciprocating engine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS079 Operate and monitor an internal combustion single fuel reciprocating engine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing single fuel engine plant faults using data analysis techniques and tools
- applying work health and safety (OHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk controls
 - safe work practices
- communicating with personnel
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying single fuel engine plant status
- interpreting manuals
- monitoring and inspecting single fuel engine plant operation
- operating single fuel engines
- organising resources
- preparing and planning work
- preparing single fuel engine plant and equipment for operation
- recognising and responding to abnormal single fuel engine plant operating conditions
- testing single fuel engine plant operationally using diagnostic and testing techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- single fuel engine internal combustion reciprocating engine types and characteristics

- single fuel engine plant and equipment, location and operating parameters
- single fuel engine plant status
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS080 Operate and monitor ash and dust disposal plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor ash and dust disposal plant associated with a coal fired power station.

Power generation facilities produce waste that must either be removed, recycled or stored. Ash and dust produced from coal power generation must be disposed of using an established ash and dust handling system.

Competency in this unit requires the ability to plan work, operate ash and dust disposal plant, test ash and dust disposal plant operation, respond to abnormal ash and dust disposal plant operation, monitor and inspect ash and dust disposal plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare disposal plant for operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Inspection and field preparation for service of ash and dust disposal system is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.4 Ash and dust disposal plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Sequence for recommissioning of ash and dust disposal plant is determined in accordance with and workplace procedures
2 Operate disposal plant	2.1 Ash and dust disposal plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Ash and dust disposal plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective action is taken to rectify abnormalities in accordance with workplace procedures
3 Test disposal plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Ash and dust disposal plant is observed for correct operational response in accordance with workplace procedures
	3.3 Ash and dust disposal plant is returned to operational status upon completion of testing in accordance with workplace procedures
4 Respond to abnormal disposal plant operation	4.1 Causes of abnormal plant ash and dust disposal plant operating conditions are identified by analysing

		technical and operational information in accordance with workplace procedures
	4.2	Ash and dust disposal plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect disposal plant	5.1	Ash and dust disposal plant to be monitored and inspected is physically identified in accordance with workplace procedures
	5.2	Ash and dust disposal plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Ash and dust disposal plant problems, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS241 Operate and monitor ash and dust disposal plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS080 Operate and monitor ash and dust disposal plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing ash and dust disposal plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safety practices and procedures
- communicating with personnel
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting ash and dust disposal plant operations
- operating ash and dust disposal plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal ash and dust disposal plant operating conditions
- testing ash and dust disposal plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including ash and dust removal systems
- ash and dust disposal plant and equipment, location and operating parameters
- ash and dust disposal plant status
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- types and characteristics of ash formations, bottom ash and fly ash
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures, including recording procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS081 Operate and monitor auxiliary steam systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor auxiliary steam systems in a power generation facility.

The function of an auxiliary steam system is to deliver ancillary steam, as required, to ensure the smooth operation of plant and equipment. Auxiliaries serve to keep steam water cycles safely circulating, and to return it to thermodynamic starting point.

Competency in this unit requires the ability to plan work, operate auxiliary steam system plant, test auxiliary steam system plant, analyse auxiliary steam system plant faults, monitor and inspect auxiliary steam system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for auxiliary steam system plant operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine auxiliary steam system plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection, preoperational checks and field preparation for auxiliary steam system plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Auxiliary steam system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of auxiliary steam system plant is determined in accordance with workplace procedures
2 Operate auxiliary steam system plant	2.1 Auxiliary steam system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Auxiliary steam system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify auxiliary steam system plant abnormalities in accordance with workplace procedures
3 Test auxiliary steam system plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Auxiliary steam system plant is observed for correct operational response in accordance with workplace procedures 3.3 Auxiliary steam system plant is returned to required

		operational status upon completion of testing in accordance with workplace procedures
4 Analyse auxiliary steam system plant faults	4.1	Causes of abnormal auxiliary steam system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Auxiliary steam system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect auxiliary steam system plant	5.1	Auxiliary steam system plant is monitored and inspected to detect deviations from normal operating conditions of the plant in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Auxiliary steam system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS329 Operate and monitor auxiliary steam systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS081 Operate and monitor auxiliary steam systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing auxiliary steam system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- coordinating the operation of auxiliary steam system equipment
- identifying auxiliary steam system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting auxiliary steam system plant operation
- operating auxiliary steam system plant
- organising resources
- performing isolations
- preparing and planning work
- recognising and responding to abnormal auxiliary steam system plant operating conditions
- testing auxiliary steam system plant operationally using diagnostic and testing techniques
- using permit system
- working with auxiliary steam system plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- auxiliary steam system plant and equipment, location and operating parameters
- auxiliary steam system plant status
- characteristic auxiliary steam plant faults and corrective actions
- isolations
- manuals
- permit system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- workplace documentation
- workplace policies and procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS082 Operate and monitor boiler draught system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor boiler draught equipment.

Boiler draught is defined as the difference between atmospheric pressure and the pressure existing in a furnace or the flue gas passage of a boiler. Boiler draught is important to the smooth operation of all the systems in a power generating facility.

Competency in this unit requires the ability to plan work, operate boiler draught system plant, test boiler draught system plant, analyse boiler draught system plant faults, monitor and inspect boiler draught system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for boiler draught system operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine boiler draught system plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection, preoperational checks and field preparations for boiler draught system plant service are carried out in accordance with manufacturers' specifications and workplace procedures 1.5 Boiler draught system plant operational prerequisites are established in accordance with manufacturers' specifications and workplace procedures 1.6 Sequence for recommissioning of boiler draught system plant is determined to suit existing circumstances in accordance with workplace procedures
2 Operate boiler draught system plant	2.1 Boiler draught system plant is operated in accordance with manufacturers' specifications and workplace procedures 2.2 Boiler draught system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify abnormalities in accordance with workplace procedures
3 Test plant boiler draught system operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Boiler draught system plant is observed for correct operational response in accordance with workplace procedures 3.3 Boiler draught system plant is returned to required operational status upon completion of testing in accordance with workplace procedures

4 Analyse boiler draught system plant faults	4.1	Causes of abnormal boiler draught system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures,
	4.2	Boiler draught system plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect boiler draught system plant	5.1	Boiler draught system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures,
6 Complete documentation	6.1	Boiler draught system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS313 Operate and monitor boiler draught system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS082 Operate and monitor boiler draught system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing boiler draught system plant to identify and respond to abnormal boiler draught system plant operating conditions
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - emergency procedures
 - safe working practices
 - risk control measures
- communicating with personnel
- completing documentation
- executing corrective actions for faults
- identifying boiler draught system plant faults using data analysis techniques and tools
- identifying boiler draught system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting drawings and manuals
- isolating boiler draught system
- monitoring and inspecting boiler draught system plant operation, including combustion, fans, air flow and control
- operating boiler draught system plant
- organising resources
- preparing boiler draught system plant and equipment for operation and planning work
- testing boiler draught system plant operation using diagnostic and testing techniques
- using permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- boiler draught system faults and corrective actions
- boiler draught system plant and equipment, location and operating parameters, including combustion, fans, air flow and control
- boiler draught system plant status
- isolations requirements
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS083 Operate and monitor boiler steam/water cycle

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor a boiler steam and/or water cycle.

The relationship of components within the boiler and steam and/or water cycle in a power generating unit system, and the effect of adjustments made to components, can impact the efficiency and safety of a power generating facility's operation.

Competency in this unit requires the ability to plan work, operate boiler steam and/or water cycle plant, test boiler steam and/or water cycle plant, analyse boiler steam and/or water cycle plant faults, monitor and inspect boiler steam and/or water cycle plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisites units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for boiler/steam water cycle operation

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements, including permits to work, are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine boiler steam/water cycle plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection, preoperational checks and field preparations for boiler steam/water cycle service are carried out in accordance with manufacturers' specifications and workplace procedures
- 1.5** Boiler steam/water cycle plant operational prerequisites are established in accordance with manufacturers' specifications and workplace procedures
- 1.6** Sequence for recommissioning of boiler steam/water cycle plant is determined in accordance with workplace procedures

2 Operate boiler steam/water cycle plant

- 2.1** Boiler steam/water cycle plant is operated in accordance with manufacturers' specifications and workplace procedures
- 2.2** Boiler steam/water cycle plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify abnormalities in accordance with workplace procedures
- 2.4** Boiler steam/water cycle plant is identified and removed from service in accordance with workplace procedures

3 Test boiler steam/water cycle plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Boiler steam/water cycle plant is observed for correct operational response in accordance with workplace

		procedures
	3.3	Boiler steam/water cycle plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse boiler steam/water cycle plant faults	4.1	Causes of abnormal boiler steam/water cycle plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Boiler steam/water cycle plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect boiler steam/water cycle plant	5.1	Boiler steam/water cycle plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures,
6 Complete documentation	6.1	Boiler steam/water cycle plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS316 Operate and monitor boiler steam/water cycle.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS083 Operate and monitor boiler steam/water cycle

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing boiler steam/water cycle plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- completing documentation using recording procedures
- identifying boiler steam/water cycle plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting boiler steam/water cycle plant operations
- operating boiler steam/water cycle plant
- organising resources
- performing isolations
- preparing and planning work
- preparing boiler steam/water cycle plant and/or equipment for operation
- recognising and responding to abnormal boiler water and/or steam cycle plant operating conditions
- testing boiler steam/water cycle plant operationally using diagnostic and testing techniques
- using permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- boiler steam and/or water cycle, types and characteristics, including steam temperature controls, economisers and superheaters
- boiler steam/water cycle plant and equipment, location and operating parameters
- boiler steam/water cycle plant status
- isolations
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS084 Operate and monitor brine concentrator plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor brine concentrator plant.

Power generation facilities produce wastewater that contains minerals and solids. Brine concentrators are used to remove these impurities as part of the wastewater management and treatment process.

Competency in this unit requires the ability to plan work, operate brine concentrator plant, test brine concentrator plant, analyse brine concentrator plant faults, monitor and inspect brine concentrator plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine brine concentrator plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparations for brine concentrator service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Brine concentrator plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of brine concentrator plant is determined in accordance with workplace procedures
2 Operate brine concentrator plant	2.1 Brine concentrator plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Brine concentrator plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify brine concentrator abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 Brine concentrator plant is identified and removed from service in accordance with workplace procedures
3 Test brine concentrator plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Brine concentrator plant is observed for correct

		operational response in accordance with workplace procedures
	3.3	Brine concentrator plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse brine concentrator plant faults	4.1	Cause of abnormal brine concentrator plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Brine concentrator plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect brine concentrator plant	5.1	Brine concentrator plant to be monitored and inspected is physically identified in accordance with workplace procedures
	5.2	Brine concentrator plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
6 Complete documentation	6.1	Brine concentrator plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS324 Operate and monitor brine concentrator plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS084 Operate and monitor brine concentrator plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing brine concentrator plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - chemical uses and hazards
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying brine concentrator plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting brine concentrator plant operation
- operating brine concentrator plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal brine concentrator plant operating conditions
- testing brine concentrator plant operationally using diagnostic and testing techniques
- working with brine concentrator plant and equipment
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- brine concentrator plant and equipment, location and operating parameters
- brine concentrator plant status
- manuals
- permit to work system
- recording procedures
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safe operating principles
- WHS/OHS requirements, including:
 - chemical uses and hazards
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS085 Operate and monitor communications system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor a communications system.

A communications system includes the various processes, both formal and informal, by which information is passed between personnel within a power generation facility itself and its clients, customers and stakeholders.

Competency in this unit requires the ability to plan work, operate and monitor a communications system and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

No licensing, legislative or certification requirements apply from this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Select and use equipment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Communication systems are identified from relevant personnel and documentation in accordance with

		workplace procedures
	1.2	Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3	Communication procedures for opening, passing and receiving messages are implemented in accordance with workplace procedures
	1.4	Communication equipment is used in accordance with workplace procedures
	1.5	Limitations of communication system are identified and alternatives used in accordance with workplace procedures
2 Monitor communication system	2.1	Data acquisition is monitored and assessed for quality and action is taken in accordance with workplace procedures
	2.2	Need for communication assistance is identified and addressed in accordance with job requirements and workplace procedures
3 Complete documentation	3.1	Communication equipment problems and status is reported in accordance with workplace procedures
	3.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS203 Operate and monitor communications system.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS085 Operate and monitor communications system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring communication system
- prioritising and acknowledging faulty communication systems
- selecting and using communications system equipment
- using interpersonal and communication system protocols and procedures
- utilising communication systems
- working with non-electronic and electronic communication tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- communication systems
- interpersonal communication
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- use of non-electronic and electronic communication tools
- WHS/OHS requirements, including:

- emergency procedures
- risk control procedures
- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS086 Operate and monitor compressed air systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor compressed air systems.

Compressed air is defined as air kept under a pressure that is greater than the atmospheric pressure. Compressed air is critical to the operation of plant in power generating facilities, such as air operated control valves and fabric filter cleaning systems.

Competency in this unit requires the ability to plan work, operate compressed air system plant, test compressed air system plant, analyse compressed air system plant faults, monitor and inspect compressed air system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generating facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine compressed air system plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for compressed air system plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Compressed air system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of compressed air system plant is determined in accordance with workplace procedures
2 Operate compressed air system plant	2.1 Compressed air system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Compressed air system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify compressed air system plant abnormalities in accordance with workplace procedures 2.4 Compressed air system plant is identified and removed from service in accordance with workplace procedures
3 Test compressed air system plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Compressed air system plant is observed for correct operational response in accordance with workplace

		procedures
	3.3	Compressed air system plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse compressed air system plant faults	4.1	Causes of abnormal compressed air system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Compressed air system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect compressed air system plant	5.1	Compressed air system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Compressed air system plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS320 Operate and monitor compressed air systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS086 Operate and monitor compressed air systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- assessing compressed air system plant operation using diagnostic and testing techniques
- communicating effectively with relevant personnel
- completing documentation
- identifying compressed air system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting compressed air system plant operation
- operating compressed air systems
- organising resources
- planning and preparing work
- preparing compressed air system plant or equipment for operation
- recognising and responding to abnormal compressed air system plant operating conditions
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- compressed air system plant and equipment, location and operating parameters

- compressed air system plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS087 Operate and monitor compressed gas systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate compressed gas systems, excluding air steam.

Compressed gas is gas contained under pressure, usually in a cylinder. A compressed gas system in a power generation facility will consist of a bulk compressed gas supply system rather than individual cylinders.

Competency in this unit requires the ability to plan work, operate compressed gas system plant, test compressed gas system plant, analyse compressed gas system plant faults, monitor and inspect compressed gas system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as a maintenance operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine compressed gas system plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection for compressed gas system plant service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Compressed gas system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of compressed gas system plant is determined in accordance with workplace procedures
2 Operate compressed gas system plant	2.1 Compressed gas system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Compressed gas system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify compressed gas system plant abnormalities in accordance with workplace procedures
	2.4 Compressed gas system plant is identified and removed from service in accordance with workplace procedures
	2.5 Corrective actions are taken when compressed gas system plant abnormalities are identified during removal from service in accordance with workplace procedures
3 Test compressed gas	3.1 Operational tests are performed in accordance with

system plant operation		workplace procedures
	3.2	Compressed gas system plant is observed for correct operational response in accordance with workplace procedures
	3.3	Compressed gas system plant is returned to required operational status upon completion of test in accordance with workplace procedures
4 Analyse compressed gas system plant faults	4.1	Causes of abnormal compressed gas system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Compressed gas system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect compressed gas system plant	5.1	Compressed gas system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Compressed gas system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS318 Operate and monitor compressed gas systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS087 Operate and monitor compressed gas systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing compressed gas systems plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- completing documentation using recording procedures
- identifying compressed gas system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting compressed gas systems plant operation
- operating compressed gas system plant
- organising resources
- planning and preparing work
- preparing compressed gas system plant and equipment for operation
- recognising and responding to abnormal compressed gas system plant operating conditions
- testing compressed gas system plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- compressed gas system plant and equipment, location and operating parameters

- compressed gas system plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS088 Operate and monitor condenser and auxiliary cooling systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor condenser and auxiliary cooling systems.

Auxiliary cooling systems deliver cool water or air, as required, to reduce the heat from plant and equipment in power generation facilities. The condenser is used to change gas to liquid by cooling it.

Competency in this unit requires the ability to plan work, operate condenser cooling system plant, test condenser cooling system plant, analyse condenser cooling system plant faults, monitor and inspect condenser cooling system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine condenser and cooling system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection, preoperational checks and field preparation for condenser and cooling system plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Condenser and cooling system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of condenser and cooling system plant is determined to suit existing circumstances in accordance with workplace procedures

2 Operate condenser and cooling system plant

- 2.1** Condenser and cooling system plant are operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Condenser and cooling system plant are monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify condenser and cooling system plant abnormalities in accordance with workplace procedures

3 Test condenser and cooling system plant

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Condenser and cooling system plant are observed for

		correct operational response in accordance with workplace procedures
	3.3	Condenser and cooling system plant are returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse condenser and cooling system plant faults	4.1	Causes of abnormal condenser and cooling system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Condenser and cooling system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect condenser and cooling system plant	5.1	Condenser and cooling system plant are monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Condenser and cooling system plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS332 Operate and monitor condenser and auxiliary

cooling systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS088 Operate and monitor condenser and auxiliary cooling systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing condenser and cooling system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- identifying condenser and cooling system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting condenser and cooling system plant operations
- operating condenser and auxiliary cooling water system, including plant and equipment
- organising resources
- preparing and planning work
- recognising and responding to abnormal condenser and cooling system plant operating conditions
- testing condenser and cooling system plant operationally using diagnostic and testing techniques
- using work permits.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- condenser and cooling system plant and equipment, location and operating parameters

- condenser and cooling system plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS089 Operate and monitor d.c. electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor local and remote operation of direct current (d.c.) electrical system, including switchgears, ring main units, switchboards, rectifier and distribution systems.

Electrical systems in power generating facilities distribute electrical power to system components and provide electrical protection for power sources and components.

Competency in this unit requires the ability to plan switching operations work; carry out operation of switchgear, switchboards and rectifier systems; test switchgear and rectifier equipment operation; analyse switchgear and rectifier system faults; inspect and monitor switchgear and switchboard systems; and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for switching operations

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine d.c. electrical system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Equipment inspection, preoperational checks and field preparation for d.c. electrical system service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Switchboard and equipment operational prerequisites and switching sequences are established in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Carry out operation of switchgears, switchboards and rectifier systems

- 2.1** Operation of switchgear is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Isolation, removal and reinstatement of switchgear, switchboards and rectifier systems are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Paralleling requirements are assessed to meet d.c. electrical system stability in accordance with workplace procedures
- 2.4** Rectifier system is operated, isolated and reinstated in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test switchgear and rectifier equipment operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Switchgear and rectifier system equipment are observed for correct operational response in accordance with

		workplace procedures
	3.3	Switchgear and rectifier system equipment are returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse system, switchgear and rectifier equipment faults	4.1	Causes of abnormal d.c. electrical system and switchgear operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	d.c. electrical system, and switchgear plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Inspect and monitor system and switchboards	5.1	d.c. electrical system and switchgear is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects and abnormal operating conditions are detected in accordance with workplace procedures
6 Complete documentation	6.1	Equipment problems and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS406 Operate and monitor D.C. electrical systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS089 Operate and monitor d.c. electrical systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing system, switchgear and rectifier equipment, direct current (d.c.) electrical system and protection faults using diagnostic and test techniques
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedure
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- conducting switching, switchgear, switchboard and rectifier system operations
- identifying d.c. electrical system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting equipment and d.c. electrical system operation
- operating switchgear and equipment
- organising resources
- preparing d.c. electrical system plant and equipment for operation
- recognising and responding to abnormal d.c. electrical system plant operating conditions
- testing d.c. electrical system, switchgear and rectifier equipment operationally using data analysis techniques and tools
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- d.c. electrical system plant and equipment, location and operating parameters
- d.c. electrical system plant status
- d.c. switchgear types and characteristics
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedure
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS090 Operate and monitor dual fuel firing plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor dual fuel firing plant in which each fuel source provides a 100% maximum continuous rating.

Dual fuel firing plant must provide the means for maintaining a 100% maximum continuous rating by using alternative sources of fuel.

Competency in this unit requires the ability to plan work, operate, test, analyse and report on dual fuel firing plant operations. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored

1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures

1.3 Documentation to determine dual fuel firing plant status is assessed and evaluated in accordance with workplace procedures

1.4 Inspection, preoperational tests and field preparations for dual fuel firing service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures

1.5 Dual fuel firing plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures

1.6 Sequence for recommissioning of dual fuel firing plant is determined in accordance with workplace procedures

2 Conduct operation of dual fuel firing plant

2.1 Dual fuel firing plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures

2.2 Changeover from one fuel source to the other is conducted with minimal effect on load and steam conditions in accordance with manufacturers' recommendations and specifications, and workplace procedures

2.3 Dual fuel firing plant is monitored to detect deviations from normal operating conditions in accordance with workplace procedures

2.4 Corrective actions are taken to rectify dual fuel firing plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test, monitor, analyse and report on dual fuel firing plant operation

3.1 Tests are performed on dual fuel firing plant in accordance with workplace procedures

	3.2	Dual fuel firing plant is observed for correct operational response in accordance with workplace procedures
	3.3	Dual fuel firing plant is returned to required operational status upon completion of testing in accordance with workplace procedures
	3.4	Causes of abnormal dual fuel firing plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
4 Monitor and inspect dual fuel firing plant	4.1	Dual fuel firing plant to be monitored and inspected is physically identified in accordance with workplace procedures
	4.2	Dual fuel firing plant is monitored and inspected for normal operation to detect deviations in accordance with workplace procedures
	4.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Dual fuel firing plant problems, movements, and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS354 Operate and monitor dual fuel firing plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS090 Operate and monitor dual fuel firing plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying and responding to abnormal plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting dual fuel firing plant
- operating dual fuel firing plant
- organising resources
- planning dual fuel firing plant or equipment for operation
- reporting on dual fuel firing plant status
- testing dual fuel firing plant operationally using diagnostic and data analysis techniques
- using testing and measurement instruments to identify faults and abnormalities
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements for power generation plant
- dual fuel firing plant and equipment, location and operating parameters
- dual fuel firing plant status

- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- testing and fault-finding techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS091 Operate and monitor dust collection plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor dust collection plant associated with a power station.

Power generation facilities will produce waste that must either be removed, recycled or stored. Dust produced from the generation of power must be disposed of using an established dust handling system.

Competency in this unit requires the ability to plan work, operate dust disposal plant, test dust disposal plant operation, respond to abnormal dust disposal plant operations, monitor and inspect dust disposal plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Inspection and field preparation for dust collection plant service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.4 Dust collection plant operational prerequisites are recognised in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Sequence for recommissioning of dust collection plant is determined in accordance with workplace procedures
2 Operate dust collection plant	2.1 Dust collection plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Dust collection plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective action is taken to rectify abnormalities in accordance with workplace procedures
3 Test dust collection plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Dust collection plant is observed for correct operational response in accordance with workplace procedures 3.3 Dust collection plant is returned to required operational status upon completion of testing in accordance workplace procedures
4 Analyse dust collection plant faults	4.1 Causes of abnormal dust collection plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures

	4.2	Dust collection plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect dust collection plant	5.1	Dust collection plant is monitored and inspected for normal operation to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Dust collection plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS242 Operate and monitor dust collection plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS091 Operate and monitor dust collection plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing dust collection plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying and responding to abnormal dust collection plant operating conditions
- interpreting manuals
- monitoring and inspecting dust collection plant operations
- operating dust collection dust collection plant
- organising resources
- preparing and planning work
- preparing dust collection plant and equipment for operation
- recognising and identifying dust collection plant status
- testing dust collection plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- dust collection plant and equipment, location and operating parameters

- dust collection plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safe operating principles
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS092 Operate and monitor fixed fire protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor fixed fire protection systems.

Fixed fire protection systems are engineered sets of components that work together to detect fires, alert occupants and extinguish fires. Fixed fire protection systems use a combination of dry chemicals and wet agents to suppress fires.

Competency in this unit requires the ability to plan work, operate fixed fire protection system plant, test fixed fire protection system plant, analyse fixed fire protection system plant faults, monitor and inspect fixed fire protection system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generating facility as a fire systems operator.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine fixed fire protection system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection and field preparations for fixed fire protection system plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Fixed fire protection system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of fixed fire protection system plant is determined in accordance with workplace procedures

2 Operate fixed fire protection system plant

- 2.1** Fixed fire protection system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Fixed fire protection system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify fixed fire protection system plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test fixed fire protection system plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Fixed fire protection system plant is observed for correct operational response in accordance with manufacturers' recommendations and specifications, and workplace

		procedures
	3.3	Fixed fire protection system plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse fixed fire protection system plant faults	4.1	Causes of abnormal fixed fire protection systems plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Fixed fire protection system plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect fixed fire protection system plant	5.1	Fixed fire protection system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Fixed fire protection system plant problems, movements, and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS317 Operate and monitor fixed fire protection systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS092 Operate and monitor fixed fire protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing fixed fire protection system plant faults
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- completing documentation
- confirming operational status of firefighting and fire prevention equipment
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting fixed fire protection system plant operation
- operating fixed fire protection system plant
- preparing and planning work
- testing fixed fire protection system plant operationally.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- fire protection system testing
- fire suppression systems
- operational status of firefighting and fire prevention equipment
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:

- emergency procedures
- risk control measures
- safe work practices
- workplace documentation, including reports, records and logs
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS093 Operate and monitor flue gas (NOx) mitigation systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the operation, inspection and monitoring of flue gas – Nitrogen Oxides (NOx) mitigation systems. NOx mitigation systems are used by coal, gas, oil and biomass fired, oil and gas fired gas turbines and combined cycle power generation facilities.

NOx are poisonous gases derived from nitrogen and oxygen combustion under high pressure and temperatures. NOx is composed of nitric oxide (NO), and a smaller percentage of more poisonous nitrogen dioxide (NO₂).

Competency in this unit requires the ability to plan work, carry out operation of NOx mitigation system, test NOx mitigation operation, analyse NOx mitigation system faults, inspect and monitor NOx mitigation system, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Inspection, preoperational checks and preparations for NOx mitigation service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.4** NOx mitigation plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Sequence for recommissioning of NOx mitigation plant is determined to suit existing circumstances in accordance with workplace procedures

2 Operate NOx mitigation plant

- 2.1** NOx mitigation plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** NOx mitigation plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify NOx mitigation abnormalities in accordance with workplace procedures

3 Test NOx mitigation plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** NOx mitigation plant is observed for correct operational response in accordance with workplace procedures
- 3.3** NOx mitigation plant is returned to required operational status upon completion of test in accordance with workplace procedures

4 Analyse NOx mitigation plant faults	4.1	Causes of abnormal NOx mitigation plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	NOx mitigation plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect NOx mitigation plant	5.1	NOx mitigation plant to be monitored and inspected is physically identified in accordance with workplace procedures
	5.2	NOx mitigation plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	NOx mitigation plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS435 Operate and monitor flue gas (NOx) mitigation systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS093 Operate and monitor flue gas (NO_x) mitigation systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing NO_x mitigation plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying NO_x mitigation plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting NO_x mitigation plant
- operating NO_x emission control plant and equipment
- organising resources
- preparing NO_x mitigation plant and equipment
- recognising and responding to abnormal flue gas (NO_x) mitigation plant operating conditions
- testing NO_x mitigation plant operation using diagnostic and testing techniques
- working with permit system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- NOx mitigation system plant and equipment, location and operating parameters, including:
 - NOx generation during combustion process within fossil fuelled boilers and gas turbines
 - NOx emission control plant and equipment components and the way they interact with plant and equipment
- performance tests on NOx mitigation system plant
- permit system
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS094 Operate and monitor fuel firing plant - coal

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor fuel firing plant (coal).

Regular inspections and monitoring of fuel firing plant is required to ensure the safe operation of coal firing system.

Competency in this unit requires the ability to plan work, operate fuel firing (coal) plant, test fuel firing plant, analyse fuel firing plant faults, monitor and inspect fuel firing plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for fuel firing plant operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements, including permits, are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine fuel firing plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection, preoperational tests and field preparations for fuel firing plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Fuel firing plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of fuel firing plant is determined in accordance with workplace procedures
2 Operate fuel firing plant	2.1 Fuel firing plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Fuel firing plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify fuel firing plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test fuel firing plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Fuel firing plant is observed for correct operational response in accordance with workplace procedures
	3.3 Fuel firing plant is returned to required operational status upon completion of test in accordance with workplace procedures

4 Analyse fuel firing plant faults	4.1 Causes of abnormal fuel firing plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures,
	4.2 Fuel firing plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect fuel firing plant	5.1 Fuel firing plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.2 Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1 Fuel firing plant problems, movements and status are reported in accordance with workplace procedures
	6.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS315 Operate and monitor fuel firing plant (coal).

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS094 Operate and monitor fuel firing plant - coal

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing fuel firing plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- completing documentation using recording procedures
- identifying fuel firing (coal) plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- isolating fuel firing plant
- monitoring and inspecting plant operation
- operating fuel firing plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal plant operating conditions
- testing fuel firing plant operation using diagnostic and testing techniques
- using work permits
- working with fuel firing plant or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- fuel firing plant and equipment, location and operating parameters
- fuel firing plant faults and corrective actions
- fuel firing plant status
- isolation requirements
- manuals
- permits
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS095 Operate and monitor fuel firing plant - gas/oil

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor fuel firing plant - gas/oil.

Regular inspections and monitoring of fuel firing plant is required to ensure the safe operation of gas and/or oil firing systems.

Competency in this unit requires the ability to plan work, operate fuel firing plant, test fuel firing plant, analyse fuel firing plant faults, monitor and inspect fuel firing plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine fuel firing plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection, preoperational tests and field preparations for fuel firing plant service are carried out in accordance with manufacturers' specifications and workplace procedures
	1.5 Fuel firing plant operational prerequisites are established in accordance with manufacturers' specifications and workplace procedures
	1.6 Sequence for recommissioning of fuel firing plant is determined in accordance with workplace procedures
2 Operate fuel firing plant	2.1 Fuel firing plant is operated in accordance with manufacturers' specifications and workplace procedures
	2.2 Fuel firing plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify fuel firing plant abnormalities in accordance with manufacturers' specifications and workplace procedures
3 Test fuel firing plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Fuel firing plant is observed for correct operational response in accordance with workplace procedures
	3.3 Fuel firing plant is returned to required operational status upon completion of test in accordance with workplace procedures
4 Analyse fuel firing plant	4.1 Causes of abnormal fuel firing plant operating conditions

faults		are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Fuel firing plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect fuel firing plant	5.1	Fuel firing plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Fuel firing plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS314 Operate and monitor fuel firing plant (gas or oil).

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS095 Operate and monitor fuel firing plant - gas/oil

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing fuel firing plant faults, including identifying and responding to abnormal fuel firing plant operating conditions
- analysing fuel firing plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation, including using recording procedures
- identifying fuel firing plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting fuel firing plant operations
- operating fuel firing plant
- organising resources
- preparing and planning work
- preparing fuel firing plant and equipment for operation
- testing fuel firing plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- fuel firing plant gas/oil plant and equipment, location and operating parameters

- fuel firing plant gas/oil status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS096 Operate and monitor fuel supply

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor fuel supply from source to recipient unit storage.

A fuel system will consist of a variety of plant and equipment that requires regular monitoring to ensure smooth operations are maintained in the fuel delivery process.

Competency in this unit requires the ability to plan work, operate fuel supply plant, test fuel supply plant, analyse fuel supply plant faults, monitor and inspect fuel supply plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility, as a fuel operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine fuel supply plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for fuel supply plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Fuel supply plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of fuel supply plant is determined to suit existing circumstances in accordance with workplace procedures
2 Operate fuel supply plant	2.1 Fuel supply plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Fuel supply plant is monitored to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify fuel supply plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test fuel supply plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 Fuel supply plant is observed for operational response in accordance with workplace procedures 3.3 Fuel supply plant is returned to required operational

		status upon completion of test in accordance with workplace procedures
4 Analyse fuel supply plant faults	4.1	Causes of abnormal fuel supply plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Fuel supply plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect fuel supply plant	5.1	Fuel supply plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Fuel supply plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS312 Operate and monitor fuel supply.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS096 Operate and monitor fuel supply

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying fuel supply plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting plant operations
- operating fuel supply plant
- organising resources
- planning and preparing work
- preparing fuel supply plant and equipment for operation
- recognising and responding to abnormal fuel supply plant operating conditions and faults
- testing plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- fuel supply plant and equipment, location and operating parameters

- fuel supply plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - safe working practices
 - risk control measures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS097 Operate and monitor fuel supply - coal

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor coal delivery systems to power generating unit storage bunkers.

A power generating facility that burns fossil fuels is reliant on fuel supply delivery systems to maintain power generation capability. A coal delivery system will consist of plant and equipment that requires regular monitoring to ensure smooth operations are maintained.

Competency in this unit requires the ability to plan work, operate coal delivery system plant, analyse coal delivery system plant faults, monitor and inspect coal delivery system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare fuel delivery plant for operation	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work, fuel delivery plant and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Quality assurance requirements are identified in accordance with workplace procedures 1.4 Documentation to determine fuel delivery plant status is assessed and evaluated in accordance with workplace procedures 1.5 Inspection and field preparation for fuel delivery plant service is carried out in accordance with manufacturers' specifications and workplace procedures 1.6 Operational prerequisites for fuel delivery plant are established in accordance with manufacturers' specifications and workplace procedures 1.7 Sequence for recommissioning of fuel delivery plant is determined in accordance with workplace procedures
2 Operate coal delivery plant	2.1 Fuel delivery plant is operated in accordance with manufacturers' specifications and workplace procedures 2.2 Fuel delivery plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Fuel delivery plant is returned to operational status upon completion of testing in accordance with workplace procedures 2.4 Causes of abnormal fuel delivery plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
3 Monitor and inspect fuel delivery plant	3.1 Fuel delivery plant to be monitored and inspected is physically identified in accordance with workplace procedures

- 3.2 Fuel delivery plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
 - 3.3 Relevant personnel are notified when defects are detected in accordance with workplace procedures
- 4 **Complete documentation**
 - 4.1 Fuel delivery plant problems, movements and status is reported in accordance with workplace procedures
 - 4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS240 Operate and monitor fuel supply -Coal.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS097 Operate and monitor fuel supply - coal

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing fuel supply delivery system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying fuel supply delivery system plant status
- interpreting manufacturers' specifications and manuals
- operating, monitoring and inspecting fuel supply delivery system plant operations
- preparing and planning work, including applying operational procedures
- recognising and responding to abnormal fuel supply delivery system plant operating conditions
- safe working practices
- testing fuel supply delivery system plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- fuel supply delivery system plant and equipment, location and operating parameters
- fuel supply delivery system plant status
- manuals
- operation and inspection of fuel supply delivery system plant operations

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures permit to work system.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS098 Operate and monitor gas production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor gas producing plant. Gas production plant is used for combustible gases which are fed into power turbines.

Competency in this unit requires the ability to plan work, operate compressed gas production plant, test compressed gas production plant, analyse compressed gas production plant faults, monitor and inspect compressed gas production plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and

- safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
 - 1.3** Documentation to determine gas production plant status is assessed and evaluated in accordance with workplace procedures
 - 1.4** Inspection and field preparation for gas production service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 1.5** Gas production plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 1.6** Sequence for recommissioning of gas production plant is determined in accordance with workplace procedures
- 2 Operate gas production plant**
- 2.1** Gas production plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.2** Gas production plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
 - 2.3** Corrective actions are taken to rectify abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3 Test gas production plant operation**
- 3.1** Operational tests are performed in accordance with workplace procedures
 - 3.2** Gas production plant is observed for operational response in accordance with workplace procedures
 - 3.3** Gas production plant is returned to required operational status upon completion of test in accordance with workplace procedures

4 Analyse gas production plant faults	4.1	Causes of abnormal gas production plant operating conditions are identified and by analysing technical and operational information in accordance with workplace procedures
	4.2	Gas production plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect gas production plant	5.1	Gas production plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Gas production plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS319 Operate and monitor gas production plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS098 Operate and monitor gas production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing gas production plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying gas production plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting gas production plant operations
- operating gas production plant
- organising resources
- preparing and planning work
- preparing gas production plant and equipment for operation
- recognising and responding to abnormal gas production plant operating conditions
- testing gas production plant operations using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- gas production plant and equipment, location and operating parameters

- gas production plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS099 Operate and monitor generator/alternator

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor a generator and/or alternator.

An alternator is an electrical generator that converts mechanical energy to electrical energy in the form of an alternating current (a.c.). In contrast, a generator can produce either a.c. or direct current (d.c.).

Competency in this unit requires the ability to plan work, operate generator and/or alternator plant, test generator and/or alternator plant, analyse generator and/or alternator plant faults, monitor and inspect generator and/or alternator plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Generator and/or alternator running up and loading schedule are ascertained from relevant documentation in accordance with workplace procedures
- 1.4** Inspection, preoperational tests and field preparations for generator and/or alternator plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Generator and/or alternator plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of generator and/or alternator plant is determined to suit existing circumstances in accordance with workplace procedures

2 Operate generator/alternator plant

- 2.1** Output is adjusted to achieve required generator and/or alternator operating requirements and demand in accordance with workplace procedures
- 2.2** Generator and/or alternator plant is operated within limits of design in accordance with regulatory requirements and workplace procedures
- 2.3** Generator and/or alternator plant is monitored and observed to detect deviations from required operating conditions in accordance with workplace procedures
- 2.4** Corrective actions are taken to rectify generator and/or alternator abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test generator/alternator

- 3.1** Operational tests are performed in accordance with

plant operation	workplace procedures
	3.2 Generator and/or alternator plant is observed for correct operational response in accordance with workplace procedures
	3.3 Generator and/or alternator plant is returned to operational status upon completion of testing in accordance with workplace procedures
4 Analyse generator/alternator plant faults	4.1 Cause of abnormal generator and/or alternator plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Generator and/or alternator plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect generator/alternator plant	5.1 Generator and/or alternator plant to be monitored and inspected is physically identified in accordance with workplace procedures
	5.2 Generator and/or alternator plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.3 Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1 Generator and/or alternator plant movements, abnormalities and status are reported in accordance with workplace procedures
	6.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS362 Operate and monitor generator/alternator.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS099 Operate and monitor generator/alternator

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing generator and/or alternator plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying generator and/or alternator plant status
- implementing regulations, legislative requirements, industry standards, codes of practice and manufacturers' specifications
- interpreting manuals
- monitoring and inspecting generator and/or alternator plant operations, including adjusting generator and/or alternator voltage, frequency and power factors, and site target values
- operating a generator and/or alternator unit
- organising resources
- preparing and planning work
- recognising and responding to abnormal generator and/or alternator plant operating conditions
- testing generator and/or alternator plant operationally using diagnostic and testing techniques
- working with generator and/or alternator plant and/or equipment
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- abnormal generator and/or alternator behaviour

- generator and/or alternator plant and equipment, location and operating parameters, including types and characteristics
- generator and/or alternator voltage, frequency and power factors, and site target values
- manuals
- permit to work system
- regulations, legislative requirements, industry standards, codes of practice and manufacturers' specifications
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS100 Operate and monitor heat exchangers and cooling systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor heat exchangers and cooling systems within power generation facilities.

A heat exchanger is used in power generation facilities to maintain efficiency in the steam and water cycle. The cooling system is used to reduce the heat from power generation plant and equipment.

Competency in this unit requires the ability to plan work, operate heat exchangers and cooling system plant, test heat exchangers and cooling system plant, analyse heat exchangers and cooling system plant faults, monitor and inspect heat exchangers and cooling system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power plant as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine heat exchangers and cooling system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection and field preparation for heat exchangers and cooling system plant service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Heat exchangers and cooling system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of heat exchangers and cooling system plant is determined in accordance with workplace procedures

2 Operate heat exchangers and cooling system plant

- 2.1** Heat exchangers and cooling system plant are operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Heat exchangers and cooling system plant are monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify heat exchangers and cooling system plant abnormalities in accordance with manufacturers' specifications and workplace procedures

3 Test and analyse heat exchangers and cooling system plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures

	3.2	Heat exchangers and cooling system plant is tested for correct operational response observed in accordance with workplace procedures
	3.3	Heat exchangers and cooling system plant is returned to required operational status upon completion of testing in accordance with workplace procedures
	3.4	Causes of abnormal heat exchangers and cooling system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
4 Monitor and inspect heat exchangers and cooling system plant	4.1	Heat exchangers and cooling system plant are monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	4.2	Appropriate personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Heat exchangers and cooling system plant problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS330 Operate and monitor heat exchangers and cooling systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS100 Operate and monitor heat exchangers and cooling systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing heat exchangers and cooling system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicate with personnel
- completing documentation
- identifying heat exchangers and cooling system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring and inspecting heat exchangers and cooling system plant
- operating heat exchangers and cooling system plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal heat exchangers and cooling system plant operating conditions
- testing heat exchangers and cooling system plant operationally using diagnostic and testing techniques
- utilising the permit to work system
- working with heat exchangers and cooling system plant and equipment for operation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- heat exchangers and cooling system plant and equipment, location and operating parameters
- heat exchangers and cooling system plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS101 Operate and monitor HRSG hot gas control system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor heat recovery steam generator (HRSG) hot gas control systems.

HRSGs are used to recover heat from hot gas streams which is then supplied to a steam turbine to generate additional electric power. The hot gas control system is used to operate the internal gas return and bypass system in the HRSG.

Competency in this unit requires the ability to plan work, operate HRSG plant, test HRSG plant, analyse HRSG plant faults, monitor and inspect HRSG plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Documentation to determine HRSG hot gas control system plant status is assessed and evaluated in accordance with workplace procedures 1.4 Inspection and field preparation for HRSG hot gas control system plant service is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 HRSG hot gas control system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.6 Sequence for recommissioning of HRSG hot gas control system plant is determined to suit existing circumstances in accordance with workplace procedures
2 Operate HRSG hot gas control system plant	2.1 HRSG hot gas control system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 HRSG hot gas control system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify HRSG hot gas control system plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test and analyse HRSG hot gas control system plant operation	3.1 Operational tests are performed in accordance with workplace procedures 3.2 HRSG hot gas control system plant is observed for correct operational response in accordance with workplace procedures

	3.3	HRSG hot gas control system plant is returned to required operational status upon completion of test in accordance with workplace procedures
	3.4	Cause of abnormal HRSG hot gas control system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
4 Monitor and inspect HRSG hot gas control system plant	4.1	HRSG hot gas control system plant to be monitored and inspected is physically identified in accordance with workplace procedures
	4.2	HRSG hot gas control system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
5 Complete documentation	5.1	HRSG hot gas control system plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS333 Operate and monitor HRSG hot gas control system.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS101 Operate and monitor HRSG hot gas control system

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing heat recovery steam generator (HRSG) hot gas control system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying HRSG hot gas control system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting HRSG hot gas control system plant operations
- operating HRSG hot gas control system
- organising resources
- preparing and planning work
- recognising and responding to abnormal HRSG hot gas control system plant operating conditions
- testing HRSG hot gas control system plant operationally using diagnostic and testing techniques
- using permits working with HRSG hot gas control system plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- HRSG hot gas control system plant and equipment, location and operating parameters
- HRSG hot gas control system plant status
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS102 Operate and monitor hydro plant auxiliary systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor hydro plant auxiliary systems.

A variety of auxiliary plant systems and related controls are used in power generation facilities to support the operation of hydro generating units. Auxiliary plant systems may include ancillary equipment such as pumps, valves, screens and seals.

Competency in this unit requires the ability to plan work, operate hydro plant auxiliary system, test hydro plant auxiliary system, analyse hydro plant auxiliary faults, monitor and inspect hydro plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Hydro plant auxiliary system running-up and loading schedule are ascertained from relevant documentation in accordance with workplace procedures 1.4 Inspection, preoperational tests and field preparation for hydro plant auxiliary system service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.5 Hydro plant auxiliary system operational prerequisites are established in accordance manufacturers' specifications and workplace procedures 1.6 Sequence for recommissioning of hydro plant auxiliary system is determined in accordance with procedures
2 Test hydro plant auxiliary system operation	2.1 Hydro plant auxiliary system is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Operational tests are performed in accordance with workplace procedures 2.3 Hydro plant auxiliary system plant is observed for operational response in accordance with workplace procedures 2.4 Hydro plant auxiliary system is returned to required operational status upon completion of testing in accordance with workplace procedures
3 Analyse hydro plant auxiliary system faults	3.1 Cause of abnormal hydro plant auxiliary system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures 3.2 Hydro plant auxiliary system integrity and personnel safety is maintained in consultation with relevant

		personnel and technical and operational documentation in accordance with workplace procedures
4 Monitor and inspect hydro plant auxiliary system	4.1	Hydro plant auxiliary system is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	4.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Hydro plant auxiliary system problems, abnormalities and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS361 Operate and monitor hydro plant auxiliary systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS102 Operate and monitor hydro plant auxiliary systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing hydro plant auxiliary system faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying hydro plant auxiliary system status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring and inspecting hydro plant auxiliary system operations
- operating hydro plant auxiliary system and equipment, including when under the influence of high water pressures and/or flows
- organising resources
- preparing and planning work
- recognising and responding to abnormal hydro plant auxiliary system operating conditions
- testing hydro plant auxiliary system operationally using diagnostic and testing techniques
- using permit to work system
- working with hydro plant auxiliary system and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including hydro generator types and characteristics
- hydro plant auxiliary system and equipment, location and operating parameters
- hydro plant auxiliary system, including equipment behaviours under the influence of high

- water pressure and flows
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS103 Operate and monitor hydro unit control and protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor a hydro unit control and protection system.

Hydro unit controls and protection systems provide operators with the facilities to control and supervise plant and equipment. Hydro unit control and protection systems help to ensure efficiency in critical applications such as turbine control, energy management and equipment protection.

Competency in this unit requires the ability to plan work, carry out operation of hydro unit control and protection system, test hydro unit control and protection system operation, analyse hydro unit control and protection system faults, inspect and monitor hydro unit control and protection system, and complete all documentation. Individuals will, in general, work under supervision, as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Hydro unit control and protection system run-up and loading schedule are ascertained from relevant documentation in accordance with workplace procedures
- 1.4** Inspection, preoperational tests and field preparation for hydro unit control and protection system service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Hydro unit control and protection system operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of hydro unit control and protection system is determined in accordance with workplace procedures

2 Operate hydro control and protection system

- 2.1** Hydro unit control and protection system is adjusted to achieve operating requirements in accordance with workplace procedures
- 2.2** Hydro unit control and protection system is operated within limits of design in accordance with workplace procedures
- 2.3** Hydro unit control and protection system is monitored and observed to detect deviations from required operating conditions in accordance with workplace procedures
- 2.4** Corrective actions are taken to rectify hydro unit control and protection system abnormalities in accordance with manufacturers' recommendations and specifications, and

		workplace procedures
3 Test hydro unit control and protection system operation	3.1	Operational tests are performed in accordance with workplace procedures
	3.2	Hydro unit control and protection system is observed for operational response in accordance with workplace procedures
4 Analyse hydro unit control and protection system faults	4.1	Cause of abnormal hydro unit control and protection system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Actions to rectify hydro unit control and protection system faults are determined in accordance with workplace procedures
5 Monitor and inspect hydro unit control and protection system	5.1	Hydro unit control and protection system to be monitored and inspected is physically identified in accordance with workplace procedures
	5.2	Hydro unit control and protection system is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
6 Complete documentation	6.1	Hydro unit control and protection system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS446 Operate and monitor hydro unit control and protection systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS103 Operate and monitor hydro unit control and protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing operational faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying and operating hydro unit control and protection system and using operational requirements
- identifying hydro unit control and protection system status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting hydro unit control and protection system operation
- organising resources
- preparing hydro unit control and protection system for operation
- recognising and responding to abnormal hydro unit control and protection system operating conditions
- testing hydro unit control and protection system operationally using diagnostic and testing techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- hydro unit control and protection system, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS104 Operate and monitor oil systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, monitor and inspect oil systems.

Power generation facilities rely on oil systems to run power generation applications. Maintaining clean oil systems is essential to equipment and plant reliability.

Competency in this unit requires the ability to plan work, operate oil systems plant, test oil systems plant, analyse oil systems plant faults, monitor and inspect oil systems plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored

- 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3 Documentation to determine oil system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4 Inspection, preoperational checks and field preparations for oil system service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5 Oil system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications; and workplace procedures
- 1.6 Sequence for recommissioning of oil system plant is determined in accordance with workplace procedures

2 Operate oil system plant

- 2.1 Oil system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2 Oil system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3 Corrective actions are taken to rectify oil system plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4 Oil system plant is removed from service in accordance with workplace procedures

3 Test oil system plant operation

- 3.1 Operational tests are performed in accordance with workplace procedures
- 3.2 Oil systems plant is observed for correct operational response in accordance with workplace procedures
- 3.3 Oil system plant is returned to required operational status upon completion of testing in accordance with

		workplace procedures
4 Analyse oil system plant faults	4.1	Causes of abnormal oil system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Oil system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect oil system plant	5.1	Oil system plant is monitored and inspected to detect deviations from normal operating conditions in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Oil system plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS326 Operate and monitor oil systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS104 Operate and monitor oil systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing oil system plant faults data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- identifying oil system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting oil system plant operation
- operating oil system plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal oil system plant operating conditions
- testing oil system plant operationally diagnostic and testing techniques
- utilising permit to work system
- working with oil system plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals
- oil system plant and equipment, location and operating parameters, including supervisory,

- alarm, protection and control equipment
- oil system plant status
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS105 Operate and monitor reverse osmosis plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor reverse osmosis plant.

Reverse osmosis is a water purification technology that uses a semipermeable membrane to remove dissolved inorganic solids such as salts, ions, molecules and larger particles from water.

Competency in this unit requires the ability to plan work, operate reverse osmosis plant, test reverse osmosis plant, analyse reverse osmosis plant faults, monitor and inspect reverse osmosis plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine reverse osmosis plant status is assessed and evaluate, in accordance with workplace procedures
	1.4 Inspection and field preparations for reverse osmosis plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Reverse osmosis plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of reverse osmosis plant is determined to suit existing circumstances in accordance with workplace procedures
2 Operate reverse osmosis plant	2.1 Reverse osmosis plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Reverse osmosis plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify abnormalities in reverse osmosis plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.4 Reverse osmosis plant is identified and removed from service in accordance with workplace procedures
3 Test reverse osmosis plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Reverse osmosis plant is observed for correct operational

		response in accordance with workplace procedures
	3.3	Reverse osmosis plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse reverse osmosis plant faults	4.1	Causes of abnormal reverse osmosis plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Reverse osmosis plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect reverse osmosis plant	5.1	Reverse osmosis plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Reverse osmosis plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS323 Operate and monitor reverse osmosis plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS105 Operate and monitor reverse osmosis plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing reverse osmosis plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - chemical use and hazards
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- determining permit to work
- identifying and responding to abnormal reverse osmosis plant operating conditions
- identifying reverse osmosis plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting reverse osmosis plant operation
- operating reverse osmosis plant
- organising resources
- preparing and planning work
- testing reverse osmosis plant operationally using diagnostic and testing techniques
- working with reverse osmosis plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- reverse osmosis plant and equipment, location and operating parameters
- reverse osmosis plant status
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
 - chemical use and hazards
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS106 Operate and monitor site services water systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor a power generation facility's site services water system, excluding fixed fire water services.

Water systems are an essential component in power generating facility operations. The smooth operation of a power generating facility's water system must be maintained and optimised to ensure safety and the mitigation of potential impacts from dangerous situations.

Competency in this unit requires the ability to plan work, operate water system plant, test water system plant operation, respond to abnormal water system plant operation, monitor and inspect water system plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine water system plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection and field preparations of water system plant service is carried out in accordance with manufacturers' specifications and workplace procedures
	1.5 Water system plant operational prerequisites are established in accordance with manufacturers' specifications and workplace procedures
	1.6 Sequence for recommissioning of water system plant is determined in accordance with workplace procedures
2 Operate water system plant	2.1 Water system plant is operated in accordance with manufacturers' specifications and workplace procedures
	2.2 Water system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify abnormalities in accordance with manufacturers' specifications and workplace procedures
3 Test water system plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Water system plant is observed for correct operational response in accordance with workplace procedures
	3.3 Water system plant is returned to operational status upon completion of testing in accordance with workplace procedures
4 Analyse water system plant faults	4.1 Causes of abnormal water system plant operating conditions are identified by analysing technical and

		operational information in accordance workplace procedures
	4.2	Water system plant integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect water system plant	5.1	Water system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Water system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS244 Operate and monitor site services water systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS106 Operate and monitor site services water systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing water system plant faults using analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying water system plant status
- interpreting manufacturers' specifications and manuals
- monitoring and inspecting water system plant operations
- operating water system plant
- organising resources
- preparing and planning work
- preparing plant and equipment for operation
- recognising and responding to abnormal water system plant operating conditions
- testing water system plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- inspection and monitoring plant water system
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safe operating principles
- water system plant and equipment, location and operating parameters
- water system plant status, including the identification of faults and abnormalities
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS107 Operate and monitor supervisory control and data acquisition systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake monitoring and operation of screen based supervisory control and data acquisition (SCADA) systems.

SCADA is a control system that uses computers, networked data communications and graphic interfaces. It may also use other peripheral devices to interface with process plant and/or machinery in power generation facilities.

Competency in this unit requires the ability to operate SCADA, monitor and interpret information and enhance screen display. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Operate SCADA screen displays	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Screen displays and applications are identified and retrieved in accordance with workplace procedures and SCADA system requirements 1.4 Functions available from the screen-based equipment are identified and selected in accordance with workplace procedures and SCADA system requirements 1.5 Functions available from screen-based equipment are utilised in accordance with workplace procedures and SCADA system requirements
2 Monitor and interpret SCADA information	2.1 Screen displays are monitored in accordance with workplace procedures and SCADA system requirements 2.2 Abnormal values or faults are identified by analysis of information obtained from screen displays in accordance with workplace procedures and SCADA system requirements 2.3 Corrective action is taken in accordance with workplace procedures and SCADA system requirements 2.4 Alarms are acknowledged, prioritised and responded to in accordance with workplace procedures and SCADA system requirements
3 Enhance SCADA screen display	3.1 Requirements for the development of new screen displays are identified and confirmed in accordance with workplace procedures and SCADA system requirements 3.2 New screen displays are researched, assessed and confirmed with relevant personnel in accordance with workplace procedures and SCADA system requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS347 Operate and monitor supervisory, control and data acquisition systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS107 Operate and monitor supervisory control and data acquisition systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- enhancing screen display
- interpreting manuals
- managing screen-based equipment, including the full range of applications
- monitoring and interpreting information from supervisory control and data acquisition (SCADA) system
- operating screen displays
- responding and prioritising response to alarms.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements performance criteria and include knowledge of:

- alarm systems
- distributed control system (DCS)
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- remote telemetry and data acquisition
- SCADA system
- Windows operating system

- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS108 Operate and monitor system equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, monitor and control high voltage (H.V.) apparatus on the system via supervisory control and data acquisition (SCADA) control.

SCADA is a control system that uses computers, networked data communications and graphic interfaces. It uses other peripheral devices such as programmable logic controllers (PLCs) and discrete proportional integral derivative (PID) controllers to interface with plant, equipment or machinery.

Competency in this unit requires the ability to plan work, operate system equipment, monitor system equipment, analyse system equipment faults and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 System and associated H.V. apparatus and SCADA equipment operational prerequisites are identified and established in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.4 Sequence for recommissioning of system and H.V. apparatus and equipment through SCADA is identified and determined in accordance with workplace procedures
2 Operate system and equipment	2.1 System and equipment and SCADA programs are operated in accordance with workplace procedures 2.2 Load shedding requirements are identified, selected and monitored during equipment operations to ensure system integrity in accordance with workplace procedures 2.3 System and operations are completed in consultation with relevant personnel in accordance with workplace procedures
3 Monitor system and equipment	3.1 Voltage and current requirements are assessed, evaluated and controlled to maintain system and equipment integrity and stability in accordance with workplace procedures 3.2 System and equipment are monitored for normal operations and to detect deviations in accordance with workplace procedures 3.3 Corrective actions to rectify system and equipment abnormalities are taken in accordance with workplace procedures 3.4 Relevant personnel are notified when system and equipment defects and abnormal operating conditions are detected in accordance with workplace procedures

4 Analyse system and equipment faults	4.1 Cause of system equipment operating faults are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Operation of protection system is identified and assessed evaluate nature and cause of fault conditions in accordance with workplace procedures
	4.3 Communication is established with key stakeholders to identify nature and source of equipment system fault and failure in accordance with workplace procedures
	4.4 System integrity and personnel safety are maintained in consultation with relevant personnel and technical and operational documentation, including contingency plans, in accordance with workplace procedures
5 Complete documentation	5.1 Equipment problems, movements and status are reported in accordance with workplace procedures
	5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS441 Operate and monitor system equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS108 Operate and monitor system equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing system equipment faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring system equipment and identifying status
- operating screen-based equipment
- operating, monitoring and controlling high voltage (H.V.) apparatus through use of supervisory control and data acquisition (SCADA) system
- planning and preparing work
- recognising and responding to abnormal system equipment operating conditions.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- operation of SCADA system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- system equipment, including location, operating parameters and status
- WHS/OHS requirements, including:

- emergency procedures
- risk control measures
- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS109 Operate and monitor water quality monitoring systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate and monitor water quality monitoring systems in a power generation facility. These systems include all analytical devices used to monitor process chemical conditions.

Water quality refers to the chemical, physical, biological and/or radiological characteristics of water. Water quality is a crucial factor for avoiding corrosion and scaling of turbines, boilers and pipes in power generating plant.

Competency in this unit requires the ability to plan work, operate water quality monitoring systems plant, test water quality monitoring systems plant, analyse water quality monitoring systems plant faults, monitor and inspect water quality monitoring systems plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine water quality monitoring system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Water quality monitoring system plant inspection is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Water quality monitoring system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of water quality monitoring system plant is determined in accordance with workplace procedures

2 Operate water quality monitoring system plant

- 2.1** Water quality monitoring system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Water quality monitoring system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify abnormalities in water quality monitoring system plant in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test water quality monitoring system plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures

	3.2	Water quality monitoring system plant is observed for correct operational response in accordance with workplace procedures
	3.3	Water quality monitoring system plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse water quality monitoring system plant conditions	4.1	Cause of abnormal water quality monitoring system plant conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Water quality monitoring system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect water quality monitoring system plant	5.1	Water quality monitoring system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Water quality monitoring systems plant problems, movements, abnormalities and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS325 Operate and monitor water quality monitoring systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS109 Operate and monitor water quality monitoring systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing water quality monitoring system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices, including use of safety data sheets (SDS)
- communicating with personnel
- completing documentation using recording procedures
- identifying water quality monitoring system plant status
- implementing with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting water quality monitoring system plant operation
- operating water quality monitoring system plant
- organising resources
- preparing and planning work
- recognising and responding to abnormal water quality monitoring system plant operating conditions
- testing water quality monitoring system plant operationally using diagnostic and testing techniques
- using permit to work system
- working with water quality monitoring system plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including general responsibilities for power production plant operations
- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- water quality monitoring system plant and equipment, location and operating parameters
- water quality monitoring system plant status
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices, including use of SDS
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS110 Operate and monitor water systems condensate and feedwater

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor water systems condensate and feedwater.

Water systems are used to supply high-quality water to the generator and to heat water. Between the condenser and feedwater pump, the water is called condensate and between the feedwater pump and the generator the water is called feedwater.

Competency in this unit requires the ability to plan work, operate water system condensate and feedwater plant, test water system plant, analyse water system plant faults, monitor and inspect water system plant, and complete all documentation. Individuals will, in general, work as an operator in a power generation plant.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare for water systems plant operation

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements including permits are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine water system plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection, preoperational checks and field preparation for water system plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Water system plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of water system plant is determined in accordance with workplace procedures

2 Operate water system plant

- 2.1** Water system plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Water system plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify water system abnormalities in accordance with workplace procedures

3 Test water system plant operation

- 3.1** Operational tests are performed in accordance with workplace procedures
- 3.2** Water system plant is observed for correct operational response in accordance with workplace procedures
- 3.3** Water system plant is returned to required operational status upon completion of testing in accordance with

		workplace procedures
4 Analyse water system plant faults	4.1	Causes of abnormal water system plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Water system plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect water system plant	5.1	Water system plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Water system plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS331 Operate and monitor water systems condensate and feedwater.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS110 Operate and monitor water systems condensate and feedwater

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing water system plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- communicating with personnel
- completing documentation using recording procedures
- identifying water system plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring and inspecting water system plant operations
- operating water system
- organising resources
- performing isolations
- preparing and planning work
- recognising and responding to abnormal water system plant operating conditions
- testing water system condensate and feedwater plant operationally using diagnostic and testing techniques
- using permit system
- working with water system plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- characteristic water system plant faults and corrective actions

- feedwater system plant types and characteristics, including feedwater chemical treatments
- isolations
- manuals
- permit system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- water system plant and equipment, location and operating parameters
- water system plant status
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe work practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS111 Operate and monitor water treatment plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor water treatment and purification plant.

Water treatment plants are used to clean wastewater for reuse or discharge in power generation facilities. The water treatment process involves the purification of water through the removal of undesirable chemicals, contaminants, solids and gases.

Competency in this unit requires the ability to plan work, operate water treatment plant, test water treatment plant, analyse water treatment plant faults, monitor and inspect water treatment plant, and complete all documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Documentation to determine water treatment plant status is assessed and evaluated in accordance with workplace procedures
	1.4 Inspection and field preparation for water treatment plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Water treatment plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.6 Sequence for recommissioning of water treatment plant is determined in accordance with workplace procedures
2 Operate water treatment plant	2.1 Water treatment plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Water treatment plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.3 Corrective actions are taken to rectify abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test water treatment plant operation	3.1 Operational tests are performed in accordance with workplace procedures
	3.2 Water treatment plant is observed for correct operational response in accordance with workplace procedures
	3.3 Water treatment plant is returned to required operational status upon completion of testing in accordance with workplace procedures

4 Analyse water treatment plant faults	4.1	Causes of abnormal water treatment plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Water treatment plant integrity and personnel safety is maintained in consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect water treatment plant	5.1	Water treatment plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Water treatment plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS321 Operate and monitor water treatment plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS111 Operate and monitor water treatment plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing water treatment plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying water treatment plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and inspecting water treatment plant operation
- operating water treatment plant
- organising resources
- planning and preparing work
- preparing water treatment plant or equipment for operation
- recognising and responding to abnormal water treatment plant operating conditions
- testing water treatment plant operationally using diagnostic and testing techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- water treatment plant and equipment, location and operating parameters
- water treatment plant status
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS112 Operate bulk coal handling plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to address the storage, reclaiming and despatching of bulk coal. It also encompasses monitoring any associated mobile bulk coal handling plant operations.

Bulk coal handling plant is used to convey coal from rail transport wagons to boilers or storage bunkers. They are also used to process raw coal, crush and stack coal to feed directly into power generation facilities.

Competency in this unit requires the ability to plan and prepare work; operate bulk coal handling plant; inspect, test, analyse and report bulk coal handling plant faults; and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Quality assurance requirements are recognised in accordance with workplace procedures
- 1.4** Mineralogy information is applied in accordance with workplace procedures
- 1.5** Work schedule is consistent with in accordance with job specifications and workplace procedures
- 1.6** Pad is prepared for coal stockpiling, including removal of contaminants and drainage, in accordance with workplace procedures
- 1.7** Preoperational checks are carried out on bulk coal handling plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.8** Sequence for recommissioning of bulk coal handling plant is determined in accordance with workplace procedures

2 Conduct operation of bulk coal handling plant

- 2.1** Start-up, park-up and shutdown procedures are carried out in accordance with workplace procedures
- 2.2** Bulk coal handling plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Bulk coal handling plant is monitored in accordance with workplace procedures to detect deviations from normal operating conditions
- 2.4** Corrective actions are taken to rectify bulk coal handling plant abnormalities in accordance with workplace procedures

- 2.5 Bulk coal handling plant to be removed from service is identified and isolated in accordance with workplace procedures
 - 2.6 Inspection and fault finding are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 2.7 Coal is placed or bunkered down in predetermined stockpile location in accordance with workplace procedures
 - 2.8 Reclaim specifications are received, despatch area is notified and equipment is made ready in accordance with workplace procedures
 - 2.9 Specified coal is blended, loaded, sampled and despatched in accordance with workplace procedures
- 3 Test bulk coal handling plant operation**
 - 3.1 Tests are performed in accordance with workplace procedures
 - 3.2 Bulk coal handling plant is observed for operational response in accordance with workplace procedures
 - 3.3 Bulk coal handling plant is returned to required operational status upon completion of testing in accordance with workplace procedures
- 4 Analyse bulk coal handling plant faults**
 - 4.1 Causes of abnormal bulk coal handling plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
 - 4.2 Supplementary personnel are arranged for investigation of identified operational abnormalities in accordance with workplace procedures
- 5 Inspect bulk coal handling plant**
 - 5.1 Bulk coal handling plant to be inspected is physically identified in accordance with workplace procedures
 - 5.2 Bulk coal handling plant is inspected to detect deviations from normal operating conditions in accordance with workplace procedures
 - 5.3 Relevant personnel are notified when defects are detected in accordance with workplace procedures
- 6 Complete documentation**
 - 6.1 Bulk coal handling plant problems, movements and

status are reported in accordance with workplace procedures

- 6.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS310 Operate bulk coal handling plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS112 Operate bulk coal handling plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- blending and bunkering coal
- communicating with personnel
- completing documentation
- identifying and inspecting bulk coal handling plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring bulk coal handling plant operation
- operating bulk coal handling plant
- organising resources
- preparing and planning bulk coal handling plant and equipment
- recognising and responding to abnormal bulk coal handling plant operating conditions
- reporting on bulk coal handling plant status
- testing bulk coal handling plant using diagnostic and data analysis techniques
- using measuring and testing instruments to identify faults and abnormalities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- bulk coal handling plant and equipment, location and operating parameters

- coal blending procedures
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- testing and fault-finding techniques
- WHS/OHS requirements, including:
 - risk control measures
 - emergency procedures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS113 Operate fabric filter dust collection plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor fabric filter dust collection plant associated with coal fired power stations.

Dust collection plant is used to enhance the quality of air released from power generation processes. It consists of a blower, dust filter, a filter cleaning system and a dust receptacle or dust removal system.

Competency in this unit requires the ability to plan and prepare work; operate fabric filter dust collection plant; test, analyse, monitor, inspect and report dust collection plant faults; and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Inspection, preoperational checks and field preparations for fabric filter dust collection service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.4 Fabric filter dust collection plant operational prerequisites are identified in accordance with manufacturers' recommendations and specifications, and workplace procedures
	1.5 Sequence for recommissioning fabric filter dust collection plant is determined in accordance with workplace procedures
2 Conduct fabric filter dust collection plant operation	2.1 Fabric filter dust collection plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Fabric filter dust collection plant is monitored to detect deviations from normal operating conditions in accordance workplace procedures
	2.3 Corrective actions are taken to rectify fabric filter dust collection plant abnormalities in accordance with workplace procedures
3 Test fabric filter dust collection plant operation	3.1 Tests are performed in accordance with workplace procedures
	3.2 Fabric filter dust collection plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse fabric filter dust collection plant faults	4.1 Causes of abnormal fabric filter dust collection plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures

	4.2	Fabric filter dust collection plant integrity and personnel safety is maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect fabric filter dust collection plant	5.1	Fabric filter dust collection plant to be monitored or inspected is physically identified in accordance with workplace procedures
	5.2	Relevant personnel are notified when defects are detected in accordance with workplace procedures,
6 Complete documentation	6.1	Fabric filter dust collection plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS311 Operate fabric filter dust collection plant.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS113 Operate fabric filter dust collection plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying and inspecting fabric filter dust collection plant status
- interpreting manuals
- monitoring fabric filter dust collection plant operation
- operating fabric filter dust collection plant
- operationally testing fabric filter dust collection plant using diagnostic and data analysis techniques
- organising resources
- preparing fabric filter dust collection plant and equipment
- recognising and responding to abnormal fabric filter dust collection plant operating conditions
- reporting on fabric filter dust collection plant status
- using measurement and testing instruments to identify and analyse faults and abnormalities
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant

- fabric filter dust collection plant and equipment, location and operating parameters
- fabric filter dust collection plant status
- manuals
- operation of fabric filter dust collection plant
- permit to work system
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- test and fault-finding techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS114 Operate H.V. condition changing apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the operation of all high voltage (H.V.) condition changing apparatus.

H.V. condition changing apparatus can include on- and off-load transformer tap changers, capacitor banks, rotary converters, voltage regulators, reactors, current limiters, rectifiers and transformers. H.V. changing apparatus works within system parameters such as voltage, current, frequency, volt ampere reactive load and equipment capability.

Competency in this unit requires the ability to plan and prepare work, operate H.V. condition change apparatus and report on H.V. condition during operation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to operate H.V. condition changing apparatus	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Location of H.V. condition changing apparatus is determined from plans, drawings, system diagrams and maps in accordance with workplace procedures 1.3 H.V. condition changing apparatus for operation is identified and confirmed with relevant personnel in accordance with workplace procedures 1.4 Condition and status of H.V. condition changing apparatus is determined visually in accordance with workplace procedures 1.5 H.V. condition changing apparatus is prepared for operation in accordance with workplace procedures
2 Conduct H.V. condition changing apparatus operation	2.1 Relevant personnel are advised of progress during H.V. condition changing apparatus operation in accordance with workplace procedures 2.2 Conditions are evaluated prior to H.V. changing apparatus operation in accordance with workplace procedures 2.3 H.V. condition changing apparatus is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 H.V. condition changing apparatus is controlled and adjusted to achieve outcomes in accordance with workplace procedures 2.5 H.V. condition changing apparatus is examined for operation in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.6 Conditions are re-evaluated to confirm H.V. condition changing apparatus outcome in accordance with workplace procedures 2.7 H.V. condition changing apparatus is secured in accordance with workplace procedures

	2.8	Status of H.V. condition changing apparatus is confirmed in accordance with workplace procedures
3 Complete documentation	3.1	Equipment problems, movements and status are reported in accordance with workplace procedures
	3.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS351 Operate H.V. condition changing apparatus.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS114 Operate H.V. condition changing apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - personal protective equipment (PPE)
 - risk control measures
 - safety working practices
- communicating with personnel
- completing documentation
- identifying high voltage (H.V.) condition changing apparatus status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- operating H.V. apparatus
- planning H.V. condition changing apparatus work
- using manuals
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangement for power generation plant
- permit to work system
- plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- manuals
- WHS/OHS requirements, including:

- emergency procedures
- PPE
- risk control measures
- safety working practices
- workplace documentation
- workplace policy and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS115 Operate hydroelectric generating plant and auxiliary equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate a hydroelectric power generating facility. It includes the operational and maintenance activities associated with hydroelectric operating plant and auxiliary equipment.

Auxiliary plant systems and related controls are used to support the operation of hydro generating facilities. Auxiliary plant systems include ancillary equipment such as pumps, valves, seals and screens, motors, waterwheels and generators.

Competency in this unit requires the ability to plan and prepare work; operate, test, analyse and report on hydroelectric generating plant and auxiliary equipment. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Turbine running-up and loading schedules are ascertained from relevant documentation in accordance with workplace procedures
- 1.4** Hydroelectric generating plant and auxiliary equipment inspections, preoperational tests and field preparation for service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Hydroelectric generating plant and auxiliary equipment operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning hydroelectric generating plant and auxiliary equipment is determined in accordance with workplace procedures
- 1.7** Work is sequenced and prioritised in accordance with workplace procedures

2 Operate and monitor hydroelectric generating plant

- 2.1** Hydroelectric generating plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Key indicator limits are maintained in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Auxiliary equipment is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4** Hydroelectric generating plant and auxiliary equipment is monitored to detect deviations from normal operating

		conditions in accordance with workplace procedures
	2.5	Hydroelectric generating plant and auxiliary equipment is operated to gain maximum efficiency of energy conversion and to meet active and reactive despatch power outputs in accordance with legislative requirements and workplace procedures
	2.6	Corrective actions are taken to rectify any abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test hydroelectric generating plant and auxiliary equipment	3.1	Tests on hydroelectric generating plant and equipment are performed in accordance with workplace procedures
	3.2	Hydroelectric generating plant and equipment is observed for operational response in accordance with workplace procedures
	3.3	Hydroelectric generating plant and equipment is returned to required operational status on completion of testing in accordance with workplace procedures
4 Analyse hydroelectric generating plant and auxiliary equipment faults	4.1	Causes of abnormal operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Hydroelectric generating plant integrity and personnel safety is maintained through consultation with relevant personnel and technical and operational documentation in accordance workplace procedures
	4.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Equipment problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS343 Operate hydroelectric generating plant and auxiliary equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS115 Operate hydroelectric generating plant and auxiliary equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing workplace documentation
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting and monitoring hydroelectric generating plant and auxiliary equipment
- interpreting manuals
- operating hydroelectric generating plant and auxiliary equipment
- organising resources
- planning hydroelectric generating plant and auxiliary equipment work
- recognising and responding to abnormal hydroelectric generating plant and auxiliary equipment operating conditions using diagnostic and data analysis techniques
- reporting on hydroelectric generating plant and auxiliary equipment status
- testing hydroelectric generating plant and auxiliary equipment operationally using testing and measurement instruments to identify faults and abnormalities
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- hydroelectric generating plant and auxiliary equipment, location and operating parameters
- hydroelectric generating plant and auxiliary equipment operation and status

- manuals
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS116 Operate local H.V. switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the local operation of high voltage (H.V.) switchgear devices.

A switchgear is a combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment.

Competency in this unit requires the ability to plan and prepare work, conduct H.V. switchgear operations, validate H.V. switchgear integrity and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate H.V.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work requirements are identified from relevant personnel and documentation in accordance with

switchgear	workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 H.V. switchgear type is identified and determined for operation in accordance with workplace procedures 1.4 H.V. switchgear conditions examined and assessed for safe operation in accordance with workplace procedures 1.5 H.V. switchgear related protection suppressed in accordance with workplace procedures 1.6 Personnel are briefed and roles and responsibilities are confirmed in accordance with workplace procedures
2 Conduct H.V. switchgear operations	2.1 Mechanical operation and limitations of equipment is identified in accordance with workplace procedures 2.2 Implications of proposed work actions are identified in accordance with workplace procedures 2.3 H.V. switchgear is operated and status confirmed in accordance with workplace procedures 2.4 H.V. switchgear racking, testing, isolation, circuit earthing and reinstatement processes are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.5 Test equipment integrity is confirmed and H.V. switchgear is de-energised in accordance with workplace procedures
3 Validate H.V. switchgear integrity	3.1 H.V. switchgear is inspected for safe operation in accordance with workplace procedures 3.2 H.V. switchgear environment is inspected in accordance with workplace procedures
4 Complete documentation	4.1 H.V switchgear status is reported in accordance with workplace procedures 4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS349 Operate local H.V. switchgear

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS116 Operate local H.V. switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- de-energising high voltage (H.V.) switchgear
- identifying H.V. switchgear plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting diagrams and manuals
- isolating and earthing H.V. switchgear and equipment
- locating H.V. switchgear and equipment
- operating H.V. switchgear within design parameters
- organising resources and equipment
- planning H.V. switchgear work
- recognising abnormal H.V. switch gear operations
- reporting on H.V. switchgear status
- using H.V. electrical operational procedures and practices
- working with permits.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- diagrams and manuals
- H.V switchgear operational practices
- H.V. electrical operation practices
- H.V. switchgear plant and equipment, location and operating parameters
- operation and implication of H.V. switchgears
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- switchgear types and characteristics
- WHS/OHS requirements, including:
 - emergency procedures
 - hazard identification
 - PPE
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS117 Operate local L.V. switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the local operation of low voltage (L.V.) switchgear.

An L.V. switchgear is a combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgears de-energise equipment to allow work to be undertaken and to clear faults downstream in electricity power systems.

Competency in this unit requires the ability to plan and prepare L.V. secondary switchgear; operate switchgear; and validate, test and report on L.V. switchgear integrity. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to operate L.V. switchgear	1.1 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3 Location of L.V. switchgear is determined from relevant drawings, plans and maps in accordance with workplace procedures
	1.4 Switchgear type and operating procedure is identified in accordance with workplace procedures
	1.5 L.V. switchgear condition is assessed for safe operation in accordance with workplace procedures
	1.6 Related L.V. switchgear protection is suppressed in accordance with workplace procedures
2 Conduct L.V. switchgear operation	2.1 Mechanical operation and limitations of L.V switchgear are identified in accordance with workplace procedures
	2.2 Implications of L.V. switchgear actions are identified, in accordance with workplace procedures
	2.3 L.V. switchgear is operated and required status is confirmed in accordance with workplace procedures
	2.4 Racking, testing, isolation, circuit earthing and reinstatement processes are carried out in accordance with workplace procedures
	2.5 Test equipment integrity is confirmed and L.V. switchgear circuit is de-energised in accordance with workplace procedures
3 Validate and report L.V. switchgear integrity	3.1 L.V. switchgear is inspected for safe operation in accordance with workplace procedures
	3.2 L.V. switchgear environment is inspected in accordance with workplace procedures
4 Complete documentation	4.1 L.V. switchgear plant problems, movements and status are reported in accordance with workplace procedures

- 4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS357 Operate local L.V. switchgear

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS117 Operate local L.V. switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- conducting isolation and earthing procedures
- identifying status of low voltage (L.V.) switchgear
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- using plant drawings and plans
- planning L.V. secondary switchgear work
- preparing and operating L.V. secondary switchgear protection equipment
- recognising abnormal switchgear operations
- using manuals
- validating switchgear integrity
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- abnormal secondary switchgear operations
- arrangements for power generation plant
- isolation and earthing procedures

- L.V. secondary switchgear operations
- manuals
- permit to work system
- power generating plant, equipment and location
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - PPE
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS118 Operate manual systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate power generation plant in manual mode, in conjunction with coordinated systems, under the control of relevant authorised personnel.

Power generation plant may be manually controlled by an operator rather than automatically by a computer when required by circumstances.

Competency in this unit requires the ability to plan and prepare work, operate plant and equipment manually, and complete documentation. Individuals will, in general, work under supervision, as an operator in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS145 Undertake local systems operations

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Power generation plant status is identified and confirmed with relevant documentation in accordance with workplace procedures
	1.4 Preoperational checks are carried out on power generation plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Conduct manual operation of plant	2.1 Power generation plant to be manually controlled is identified and operated in accordance with workplace procedures
	2.2 Power generation plant is manually operated within limits of design in accordance with workplace procedures
	2.3 Power generation plant is monitored to detect deviations from normal operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify power generation plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Complete documentation	3.1 Power generation plant problems, movements and status are reported in accordance with workplace procedures
	3.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS368 Operate manual systems

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS118 Operate manual systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying operation of power generation plant and equipment
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- operating manual systems in a power generation facility
- planning manual operation of power generation plant
- recognising power generation plant status.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- manuals
- power generation plant and equipment, including location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - risk control measures

- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS119 Operate waste and contaminated water plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate, inspect and monitor waste and contaminated water plant associated with a power generating facility.

Wastewater treatment covers the mechanisms and processes used to treat wastewater that is produced as a by-product of power generation activities. Wastewater from generating plants can contain significant levels of metals, flue gas desulfurization, fly ash, bottom ash and flue gas mercury. After treatment, the treated wastewater can be either reused or released.

Competency in this unit requires the ability to plan and prepare waste and contaminated water plant; operate, test, analyse and inspect plant; report on abnormalities and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare waste and contaminated water plant work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Documentation to determine waste and contaminated water plant status is assessed and evaluated in accordance with workplace procedures
- 1.4** Inspection for waste and contaminated water plant service are carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.5** Waste and contaminated water plant operational prerequisites are established in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Sequence for recommissioning of waste and contaminated water plant is determined in accordance with workplace procedures

2 Conduct operation of waste and contaminated water plant

- 2.1** Waste and contaminated water plant is operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Waste and contaminated water plant is monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
- 2.3** Corrective actions are taken to rectify waste and contaminated water abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4** Waste and contaminated water plant is removed from service in accordance with workplace procedures

3 Test waste and contaminated water plant

- 3.1** Tests are performed in accordance with environmental requirements, manufacturers' recommendations and

operation		specifications, and workplace procedures
	3.2	Waste and contaminated water plant is observed for operational response in accordance with legislative requirements and workplace procedures
	3.3	Waste and contaminated water plant is returned to required operational status upon completion of testing in accordance with legislative requirements and workplace procedures
4 Analyse waste and contaminated water plant faults	4.1	Causes of abnormal waste and contaminated water plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Waste and contaminated water plant integrity and personnel safety is maintained, through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
5 Monitor and inspect waste and contaminated water plant	5.1	Waste and contaminated water plant to be monitored and inspected is identified in accordance with workplace procedures
	5.2	Waste and contaminated water plant is monitored and inspected for normal operation and to detect deviations in accordance with workplace procedures,
	5.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
6 Complete documentation	6.1	Waste and contaminated water plant problems, movements and status are reported in accordance with workplace procedures
	6.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS246 Operate waste and contaminated water plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS119 Operate waste and contaminated water plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- identifying and responding to abnormal waste and contaminated water plant operating conditions
- interpreting drawings and manuals
- monitoring and inspecting waste and contaminated water plant
- operating waste contaminated water plant
- organising resources
- planning work
- preparing waste and contaminated water plant or equipment for operation
- reporting on waste and contaminated water plant status
- testing waste and contaminated water plant using diagnostic and data analysis techniques
- using testing and measurement instruments to identify faults and abnormalities
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- testing and fault-finding techniques
- waste and contaminated water plant and equipment, location and operating parameters
- WHS/OHS requirements including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS120 Undertake operational commissioning and decommissioning

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the commissioning and decommissioning of power generation plant and equipment.

The operator assists the functional commissioning process in which installed power generating plant is tested to verify it functions according to design specifications. Power generating plant that is shut down and dismantled is decommissioned. Commissioning and decommissioning of power generating plant does not include removal or return to service under normal or routine maintenance situations.

Competency in this unit requires the ability to plan and prepare for work, decommission plant or equipment, remove plant or equipment, recommission plant or equipment and complete work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes. Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Resources are obtained and inspected for compliance with work specification in accordance with workplace procedures 1.4 Plans, drawings and manuals are selected and used in accordance with workplace procedures 1.5 Size, type and quantity of materials or components are obtained and inspected in accordance with workplace procedures 1.6 Work is sequenced and prioritised in accordance with workplace procedures 1.7 Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures 1.8 Work area is prepared in accordance with workplace procedures
2 Decommission plant or equipment	2.1 Isolations are confirmed in accordance with decommissioning plan and workplace procedures 2.2 Equipment or power generating plant is decommissioned in accordance with decommissioning plan and workplace procedures 2.3 Equipment or power generating plant is disconnected from energy or material sources in accordance with decommissioning plan and workplace procedures
3 Remove plant or equipment	3.1 Isolations are confirmed in accordance with workplace procedures

- 3.2 Removal of power generating plant or equipment, or dismantling of major components, is carried out in accordance with decommissioning plan and workplace procedures
 - 3.3 Unused electrical conductors are isolated and terminated in accordance with decommissioning plan and workplace procedures
 - 3.4 Other sources of energy or materials are terminated and blanked in accordance with decommissioning plan and workplace procedures
- 4 Commission plant or equipment**
 - 4.1 Isolation of power generating plant is removed in accordance with workplace procedures
 - 4.2 Preoperational checks are carried out on power generating plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.3 Sequence for commissioning plant is established in accordance with workplace procedures
 - 4.4 Power generating plant is tested for operation in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.5 Power generating plant or equipment performance is monitored using methods and testing equipment in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.6 Data is collected and referenced, and variances are recorded in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.7 Power generating plant or equipment is adjusted using relevant techniques in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.8 Final inspection is undertaken, and performance data is collected in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 5 Complete work**
 - 5.1 Work is completed and relevant personnel are notified in

accordance with workplace procedures

- 5.2 Work area is cleared of waste, cleaned, restored and secured in accordance with worksite procedures
- 5.3 Power generating plant, tools and equipment are maintained and is stored in accordance with workplace procedures
- 5.4 Work completion details are finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS412 Operational commissioning and decommissioning.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS120 Undertake operational commissioning and decommissioning

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing data
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- commissioning plant or equipment
- communicating with personnel
- completing work
- decommissioning power generating plant and equipment
- identifying power generating plant and equipment
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- planning and preparing for work
- restarting power generating plant or equipment
- using testing and measuring equipment
- utilising isolation procedures
- utilising permit to work system
- working with decommissioning procedures for removing plant or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- data analysis

- decommission and commission of power generating plant and equipment
- isolations processes
- manuals
- measurement and testing equipment
- permit to work system
- power generating plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS121 Perform plant lubrication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain grease, oil levels and quality in all areas of power generating plant. The selection and use of lubricants, as well as the care and operation of lubricating systems, is an essential part of any power generation plant maintenance program.

Competency in this unit requires the ability to plan and prepare plant to conduct lubrication, perform routine checks on plant, conduct plant lubrication and complete documentation. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare to conduct plant lubrication

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

- of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
 - 1.3 Plant lubricating status is assessed and evaluated from documentation in accordance with workplace procedures
 - 1.4 Isolation of power generation plant is arranged in accordance with workplace procedures
 - 1.5 Tools, lubricants and personal protective equipment (PPE) are acquired and used in accordance with workplace procedures
- 2 Perform routine checks on plant lubrication**
- 2.1 Power generating plant is checked in accordance with workplace procedures
 - 2.2 Power generating plant affected by abnormal lubrication are identified and relevant personnel informed in accordance with workplace procedures
- 3 Conduct plant lubrication**
- 3.1 Power generating plant requiring lubrication are cleaned before lubricating work is carried out in accordance with workplace procedures
 - 3.2 Power generating plant is lubricated in accordance with safety data sheets (SDS), manufacturers' recommendations and specifications, and workplace procedures
 - 3.3 Power generating plant is returned to operational condition to ensure safety of personnel and plant integrity in accordance with workplace procedures
- 4 Complete documentation**
- 4.1 Power generating plant problems, movements and status are reported in accordance with workplace procedures
 - 4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS207 Perform plant lubrication.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS121 Perform plant lubrication

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
 - safety data sheets (SDS)
- applying regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- communicating with personnel
- completing documentation
- complying with permit to work requirements
- implementing hazard identification and risk control measures
- lubricating power generating plant, including:
 - applying lubricants to machinery and equipment
 - conducting checks of power generating plant lubrication
 - determining problems resulting from excessive or inadequate lubricants
 - preparing and planning power generation lubricating work
- utilising isolation procedures
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangement of power generation plant
- function and types of lubricants and application

- isolations
- lubrication of plant procedures
- manuals
- permit to work system
- problems resulting from excessive or inadequate lubricants
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - PPE
 - risk control measures
 - safe working practices
 - SDS
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS122 Perform process plant inspections

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct an inspection of electric power generating plant and associated equipment.

An inspection is an organised examination of power generation plant and equipment exposed to conditions that can cause deterioration. Power generation plant and equipment should be inspected at regular intervals.

Competency in this unit requires the ability to inspect power generating plant, gain safe access to work area for inspection, conduct inspections and report and/or record the results. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for power plant inspection	1.1 Maintenance and operating history for inspection is obtained for process plant to be inspected in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Inspection requirements for power generation plant are determined and confirmed in accordance with workplace procedures 1.4 Relevant inspection checklists, recording equipment and personal protective equipment (PPE) are obtained in accordance with workplace procedures 1.5 Availability and access to power generation plant is determined and isolation processes conducted in accordance with workplace procedures 1.6 Hazards are identified in preparations for plant inspection and risk control measures are implemented in accordance with workplace procedures
2 Inspect electric power generating plant	2.1 Power generation plant is inspected in accordance with workplace procedures 2.2 Power generation plant is identified and operational status determined in accordance with workplace procedures 2.3 Inspection is conducted using approved methods in accordance with workplace procedures 2.4 Inspection requirements are completed in accordance with workplace procedures
3 Complete documentation	3.1 Records are updated in accordance with workplace procedures 3.2 Documentation is maintained in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS209 Perform process plant inspections.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS122 Perform process plant inspections

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- accessing records
- applying inspection procedures and techniques
- applying work health and safety (WHS)/occupational health and safety (OHS) legislation, including:
 - emergency procedures
 - personal protective equipment (PPE)
 - risk control measures
 - safe working practices
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- conducting equipment isolation procedures
- preparing for inspection of power generation plant
- recording and communicating inspection results
- undertaking inspection of power generation plant and equipment
- using manufacturers' specifications and manuals
- utilising inspection checklists
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- communication methods for inspection results
- inspection methods and techniques, including protocols
- isolations
- permit to work system

- power generation inspection checklists
- power generation plant inspection records
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- manuals
- WHS/OHS requirements, including:
 - emergency procedures
 - PPE
 - risk control measures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS123 Perform risk analysis of generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to identify and analyse risks in the loss of power generation and production plant.

Risk analysis identifies dangers posed by potential natural or human caused adverse events. Once risks have been identified, they must be assessed as to potential impact and the probability of occurrence.

Competency in this unit requires the ability to identify risks; conduct analysis; produce, implement and monitor recommendations; and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify risk	1.1 Power generation plant maintenance and operational procedures are obtained in accordance with workplace procedures
	1.2 Power generation plant operating and maintenance history, including incident and failure reports, is obtained in accordance with workplace procedures
	1.3 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.4 Power generation plant technical documentation is obtained in accordance with workplace procedures
	1.5 Risk analysis objectives for power generation plant are defined in accordance with workplace procedures
2 Conduct analysis	2.1 Risk analysis is completed using methodology in accordance with workplace procedures
	2.2 Power generation plant incident scenarios are identified and consequences analysed and prioritised for risk in accordance with workplace procedures
	2.3 Objectives identified during risk analysis for power generation plant risk scenarios are recorded in accordance with workplace procedures
3 Produce, implement and monitor recommendations	3.1 Recommendations for risk preventative actions are produced against each power generation plant risk scenario in accordance with workplace procedures
	3.2 Implementation of recommendations for risk controls are monitored in accordance with workplace procedures
4 Complete documentation	4.1 Risk analysis recommendations are documented in accordance with workplace procedures
	4.2 Risk analysis report is produced and submitted in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS414 Perform risk analysis of generation plant.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS123 Perform risk analysis of generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (OHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating and consulting with personnel
- completing documentation using recording procedures
- conducting risk analysis using data analysis techniques and tools
- identifying risks
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- producing, implement and monitor risk analysis recommendations
- using power generating plant and processes
- working within power generation plant operating parameters.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- identification and implementation of risks
- manuals
- power generating plant and processes
- power plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- risk analysis methods and techniques

- risk analysis recommendations
- WHS/OHS requirements, including:
 - emergency procedures
 - safe working practices
 - risk control measures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS124 Perform switching to a switching program

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform switching to a switching program.

An electrical switch can alternate a load between two sources either manually or automatically when sensors detect one of the sources has lost or gained power. A switch is installed where the backup generator is located so that the generator can be used to provide temporary electrical power, as required.

Competency in this unit requires the ability to prepare for switching program, carry out switching program, and complete all documentation. Individuals will, in general, work as an operator in, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for switching program	1.1 Authorisation is confirmed to perform switching operation with coordinating personnel in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Contingency plan is discussed with personnel coordinating switching program in accordance with workplace procedures 1.4 Permits and access requirements are identified prior to program commencement in accordance with workplace procedures 1.5 Documentation is received and checked prior to starting switching program in accordance with workplace procedures
2 Carry out switching program	2.1 Personnel involved in switching program are confirmed and directed to switching locations in accordance with workplace procedures 2.2 Communication is established and maintained with personnel coordinating switching program in accordance with workplace procedures 2.3 Access to electrical power generation plant is obtained in accordance with workplace procedures 2.4 Switching program steps are verified before and after each operation in accordance with workplace procedures 2.5 Switching steps are documented on completion of each operation in accordance with workplace procedures 2.6 Permits are issued, monitored and recorded in accordance with workplace procedures 2.7 Switching program is completed and outcomes recorded in accordance with workplace procedures
3 Complete documentation	3.1 Equipment problems, abnormalities and status are reported in accordance with workplace

- 3.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS456 Perform switching to a switching program.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS124 Perform switching to a switching program

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- acquiring and analysing system operation information
- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- carrying out switching program
- communicating with personnel
- completing documentation using recording procedures
- directing and coordinating switching programs
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- preparing, planning and prioritising work for switching programs
- using permit to work system
- working with switching operations and procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- implementation of switching programs
- manuals
- permit to work system
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- switching operations and procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS125 Perform tool store duties

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform operational processes in the storage of tools and consumable items that are used in a power generation facility.

Tool store operations revolve around monitoring and controlling the flow of tools and consumable items into and out of a power generation facility. It includes oversight of tool store operations; maintaining inventory; receiving, storing and issuing tools, materials, equipment and other items; updating records and compiling store reports.

Competency in this unit requires the ability to plan and prepare for tool store duties, issue and maintain tools and associated equipment, and complete tool store work. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for tool store duties

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work requirements are identified from relevant personnel and documentation in accordance with

		workplace procedures
	1.2	Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3	Tool and equipment audit is conducted and recorded to identify type, quantity and location in accordance with workplace procedures
	1.4	Relevant tooling requirements are identified from supplier catalogues and manuals and are ordered in accordance with workplace procedures
2 Issue and maintain tools and associated equipment	2.1	Tooling orders received are checked for compliance and stored in accordance with workplace procedures
	2.2	Tools and associated equipment are issued in accordance with workplace procedures
	2.3	Tools and associated equipment are inspected to ensure safe operation, defects are noted and repairs instigated in accordance with workplace procedures
	2.4	Tools and associated equipment are maintained in accordance with workplace procedures
	2.5	Stock levels are maintained and replacement parts or items ordered in accordance with workplace procedures
3 Complete tool store duties	3.1	Tool store inventory is maintained in accordance with workplace procedures
	3.2	Tool store area is cleared and secured in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS237 Perform tool store duties

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS125 Perform tool store duties

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing tool store duties
- interpreting manuals
- issuing and maintaining tools, consumable items and associated equipment
- maintaining tool stores documentation and records
- preparing and planning tool store work
- using tool ordering procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- consumable items and tool storage
- documenting and reporting tool store inventory
- maintenance requirements
- ordering and maintaining tool store procedures
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- tool attachments and accessories
- tool names, types and uses
- WHS/OHS requirements, including:

- emergency procedures
- risk control measures
- safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS126 Plan a scheduled outage

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to plan for a scheduled outage of power generating plant.

A schedule is a plan of action detailing a series of tasks to be undertaken at or during a specified time. A forced outage is the shutdown of generation facility, transmission or distribution line when a generating unit is unavailable to produce power due to an unexpected breakdown.

Competency in this unit requires the ability to identify outage requirements, create outage plans, implement outage plans and complete documentation. Individuals will, in general, work as an operator with responsibility for quality control, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify outage requirements	1.1 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Date, time and expected duration of outage is assessed and confirmed from relevant information and statistical records in accordance with workplace procedures 1.4 Schematic diagrams, drawings, plans or maps are consulted to determine area affected by outage in accordance with workplace procedures
2 Create outage plan	2.1 Impact of outage is ascertained in accordance with workplace procedures 2.2 Key stakeholders and equipment affected by outage are identified in accordance with workplace procedures 2.3 Status of plant and consumers affected by outage is identified and assessed in accordance with workplace procedures 2.4 Key stakeholders are consulted to determine timetable and contingency plan in accordance with workplace procedures 2.5 Disruptions to key consumers are minimised by providing alternative routes of power generation supply in accordance with workplace procedures 2.6 Scope of work to be carried out during outage is evaluated against allocated timeframes in accordance with workplace procedures 2.7 Work permits required prior to and during outage are obtained in accordance with workplace procedures
3 Implement outage plan	3.1 Work crews are notified of outage plan through the relevant channels in accordance with workplace procedures

	3.2	Notification of outage is communicated to all stakeholders in accordance with workplace procedures
4 Complete documentation	4.1	Records are maintained in accordance with workplace procedures
	4.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS423 Plan a scheduled outage.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS126 Plan a scheduled outage

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- advising and communicating with key stakeholders
- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- creating outage plans
- identifying outage requirements
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- investigating implications of outage
- planning outage work
- recognising power generation plant status
- using documenting and recording procedures
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- communication and liaison techniques
- manuals
- outages and potential impact
- permit to work system

- power generation plant and equipment, location and operating parameters
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- scheduling methods and tools
- stakeholders
- types of schedules
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS127 Plan and organise work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the planning and organising of work tasks to be undertaken by a workplace team.

Planning and organising work activities requires tasks to be identified, the development of a plan and the organisation of tasks that are assigned to team members.

Competency in this unit requires the ability to plan and prepare work, coordinate and allocate work tasks to the team, complete work documentation and report on status of completion. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work	1.1 Work requirements, including permits, are identified from relevant personnel and documentation in

accordance with workplace procedures

1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored

1.3 Materials, equipment and resources are obtained and inspected for compliance with work requirements in accordance with workplace procedures

1.4 Teamwork is planned using plans, drawings and manuals in accordance with industry standards and workplace procedures

2 Coordinate work

2.1 Planned tasks are assigned and monitored in accordance with work requirements and workplace procedures

2.2 Provision for recycling and reuse of materials is undertaken in accordance with workplace procedures

2.3 Work tasks are modified to meet unforeseen circumstances and any changes are communicated in accordance with workplace procedures

3 Complete work

3.1 Finalisation of work and restoration of site is monitored in accordance with workplace procedures

3.2 Permits are signed off and relevant personnel are notified of work completion in accordance with workplace procedures

3.3 Work records, costing data and reports are prepared and finalised in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation

Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS439 Plan and organise work.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS127 Plan and organise work

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating information to personnel
- communicating with personnel
- developing and implementing teamwork plans
- employing resource planning techniques
- estimating materials and resource requirements
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- modifying work plans
- monitoring team performance
- submitting and working with permits to work
- using recording procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- manuals
- permit to work system and processes
- plant drawings
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements

- resource planning techniques
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- work plans for teams
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS128 Produce maintenance plans for generation production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the establishment and implementation of maintenance plans for generation production plant. Power generation production plant can include boilers, turbines, hydro equipment and systems, electrical components and systems, control and monitoring systems, ash and dust systems, water treatment and fuel equipment.

A maintenance plan details the actions to maintain and improve the condition of power generating plant. It involves the inspection, servicing, repairing or replacing of the physical components of machines, plant and equipment.

Competency in this unit requires the ability to research and plan for maintenance, develop maintenance plans, and implement and monitor maintenance plans. Individuals will, in general, work under supervision, in a power generation facility as an operator with responsibility for maintenance planning.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Research and plan for maintenance

- 1.1** Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Resources for maintenance planning are obtained in accordance with workplace procedures
- 1.4** Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
- 1.5** Maintenance is sequenced and prioritised in accordance with workplace procedures
- 1.6** Potential hazards are identified, and risk control measures are selected and implemented in accordance with workplace procedures
- 1.7** Generation production plant maintenance history, including condition monitoring information, recent modifications and existing status, are identified and addressed in the maintenance plan in accordance with workplace procedures
- 1.8** Costing of maintenance work is undertaken and impact on budget is assessed in accordance with workplace procedures
- 1.9** Operational testing and generation production plant recommissioning is identified in accordance with workplace procedures

2 Develop maintenance plan

- 2.1** Maintenance schedule is placed into the maintenance plan in accordance with workplace procedures
- 2.2** Generation production plant isolation and access requests are documented in accordance with workplace procedures
- 2.3** Availability of resources is confirmed and documented in accordance with workplace procedures

	2.4	Information relevant to work activities, including risk management and quality control, is attached to maintenance plan in accordance with workplace procedures
	2.5	Maintenance plan is distributed to personnel in accordance with workplace procedures
	2.6	Maintenance methods are documented as part of the maintenance plan and are presented for review to relevant personnel in accordance with workplace procedures
3 Implement and monitor maintenance plan	3.1	Maintenance plan is implemented in accordance with workplace procedures
	3.2	Feedback on maintenance plan is sought in accordance with workplace procedures
	3.3	Maintenance plan is modified and approved in accordance with workplace procedures
	3.4	Amended maintenance plan is distributed to relevant personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS425 Produce maintenance plans for generation production plant.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS128 Produce maintenance plans for generation production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (OHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- analysing information using data analysis techniques and tools
- communicating with personnel
- developing maintenance plan
- disseminating maintenance plan
- documenting maintenance methods
- identifying risk management and quality control information and procedures
- implementing and monitoring maintenance plan
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- producing maintenance plans
- recognising maintenance requirements by applying maintenance planning principles
- researching and planning for maintenance
- using manuals.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- dissemination of maintenance plans
- generation production plant and equipment, location and operating parameters
- maintenance methods

- maintenance plan development using maintenance planning philosophies and practices
- maintenance plan implementation
- manuals
- quality control
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk management
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS129 Produce maintenance strategies for generation production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the establishment and implementation of maintenance strategies for power generation production plant. Generation production plant can include boilers, turbines, hydro equipment, electrical systems, control and monitoring systems, ash and dust systems, water treatment plant and fuel equipment.

A maintenance plan details the inspection, servicing, repairing or replacing of physical components of machines, plant and equipment used in power generation facilities through the implementation of a prescribed maintenance schedule. Strategies relate to what must happen to achieve the objectives outlined in the maintenance plan.

Competency in this unit requires the ability to research and plan for maintenance, establish strategies and implement strategies. Individuals will, in general, work under supervision, in a power generation facility as an operator with responsibility for maintenance planning and strategies.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS128 Produce maintenance plans for generation production plant

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Research and plan for strategies

- 1.1** Existing maintenance strategies are reviewed in accordance with maintenance plan and workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Business plans are reviewed for impact on maintenance plan and proposed work in accordance with workplace procedures
- 1.4** Maintenance activities are identified in accordance with maintenance plan and workplace procedures
- 1.5** Timeframes for implementation and completion of maintenance strategies are established in accordance with maintenance plan and workplace procedures
- 1.6** Key indicators of maintenance strategy performance are defined in accordance with maintenance plan and workplace procedures
- 1.7** Budget is developed to identify maintenance costs in accordance with maintenance plan and workplace procedures
- 1.8** Legal implications of maintenance work to be undertaken are identified in accordance with maintenance plan and workplace procedures
- 1.9** Risk control measures are applied in accordance with maintenance plan and workplace procedures

2 Establish strategies

- 2.1** Resources to implement maintenance strategies are identified and obtained in accordance with maintenance plan and workplace procedures
- 2.2** Timeframes and potential variances for maintenance scheduling are identified in accordance with

		maintenance plan and workplace procedures
	2.3	Interdependence of maintenance activities is identified and documented in accordance with maintenance plan and workplace procedures
	2.4	Objectives for maintenance strategies are documented in accordance with maintenance plan and workplace procedures
3 Implement strategies	3.1	Maintenance strategies are implemented to facilitate outcomes in accordance with maintenance plan and workplace procedures
	3.2	Variances in maintenance strategies are identified in accordance with maintenance plan and workplace procedures
	3.3	Strategies are redeveloped and updated in accordance with maintenance plan and workplace procedures
	3.4	Opportunities for maintenance strategy enhancements are identified and documented for inclusion in future strategy preparation in accordance with maintenance plan and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS505 Produce maintenance strategies for generation production plant.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS129 Produce maintenance strategies for generation production plant

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- establishing and implementing maintenance strategies
- establishing and implementing maintenance plan
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- producing maintenance strategies
- researching and planning maintenance strategies using data analysis techniques and tools
- undertaking maintenance strategy development
- using manuals.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- maintenance plan
- maintenance work practices and planning principles
- manuals
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk management techniques
- strategy development
- techniques for maintenance strategy development

- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS130 Respond to a critical incident

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to respond to a critical incident that may impact the operational effectiveness of a power generation facility's plant or system, endanger human life, damage or destroy property and/or have an adverse impact on the environment.

A critical incident refers to a crisis that may result in a high level of risk, directly or indirectly, to the core operations of a power generation facility. A high level of risk would be determined using the risk management processes outlined in the power generation facility's risk management system.

Competency in this unit requires the ability to identify a critical incident and consequences, stabilise power generation system, restore power generation system and review response to incident. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Identify critical incident and consequences

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Fault location is determined by monitoring and evaluating power generation system configuration and operational prerequisites in accordance with workplace procedures
- 1.4** Fault information is collated to determine type and cause of failure in accordance with workplace procedures
- 1.5** Power generation system limitations and performance, including location and external influences, are identified in accordance with workplace procedures

2 Stabilise power generation system

- 2.1** Critical incident response techniques are identified and used in accordance with workplace procedures
- 2.2** Personnel and external stakeholders are consulted prior to further critical incident actions being undertaken in accordance with workplace procedures
- 2.3** Power generation system requirements are assessed and controlled to maintain stability and integrity in accordance with workplace procedures
- 2.4** Corrective actions to rectify power generation system abnormalities are implemented following analysis of data in accordance with workplace procedures

3 Restore power generation system

- 3.1** Specialised assistance is identified in accordance with workplace procedures
- 3.2** Strategies to restore power generation system integrity are identified and communicated to relevant personnel in accordance with workplace procedures
- 3.3** Power generation system restoration is undertaken and monitored and adjusted in accordance with workplace

procedures

4 Review response to incident

- 4.1** Power generation system response is analysed in accordance with workplace procedures
- 4.2** Critical incident preventive measures are documented in accordance with workplace procedures
- 4.3** Findings are communicated to relevant personnel and key stakeholders in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS369 Respond to a critical incident.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS130 Respond to a critical incident

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel and stakeholders
- identifying and responding to abnormal power generation system operating conditions using data analysis techniques and tools
- identifying critical incident and consequences
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- recognising power generation plant or system status using diagnostic techniques
- restoring power generation system
- reviewing response to incident
- stabilising and restoring power generation system operations
- stabilising power generation system
- using manuals.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- abnormal power generation system operating conditions
- arrangements of power production plant
- generation and transmission capability limits
- manuals
- power generation plant and equipment, location and operating parameters

- power generation plant status
- power generation system restoration operations
- power generation system stabilisation
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS131 Run up a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a steam turbine run-up to a stable operating condition.

Run-up of a steam turbine will involve the operator making a sequence of checks prior to and during start-up. This ensures that loading the turbine is completed in a safe and consistent manner.

Competency in this unit requires the ability to plan and prepare steam turbine run-up work, conduct steam turbine run-up, test steam turbine and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare steam turbine work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Preoperational checks are carried out on steam turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.4 Turbine running-up and loading schedule are ascertained from relevant documentation in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Take action to commence run-up steam turbine	2.1 Steam turbine and generator auxiliary systems are made available to support steam turbine run-up in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Steam turbine plant is monitored to detect deviations from normal operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify steam turbine abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 Steam generator is synchronised and connected to electrical system in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test steam turbine plant operation	3.1 Tests are performed in accordance with workplace procedures 3.2 Power generation system and steam turbine plant are observed for operational response in accordance with workplace procedures 3.3 Steam turbine plant is returned to required operational status upon completion of testing in accordance with

workplace procedures

4 Analyse system faults	4.1 Causes of abnormal steam turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Steam turbine plant integrity and personnel safety is maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	4.3 Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1 Steam turbine plant problems, movements and status are reported in accordance with workplace procedures
	5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS411 Run up a steam turbine.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS131 Run up a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- communicating with personnel
- identifying and responding to abnormal steam turbine plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and operating steam turbine plant and equipment
- organise resources
- planning and preparing steam turbine operations work
- recognising steam turbine plant status
- recording procedures to complete documentation
- starting, running up and operating steam turbine and associated plant and equipment
- testing gas turbine plant operation using diagnostic and data analysis techniques and tools to determine faults
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- steam turbine operating procedures and processes

- system components and interaction with other plant and equipment, including steam turbine operations
- turbine supervision and control systems
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- workplace policies and procedures
- workplace documentation and manuals.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS132 Schedule generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to undertake the scheduling of generation plant to meet forecast demand.

Scheduling is the process of optimising plant operations in the power generation process. The aim is to enhance overall energy delivery over different planning and time horizons.

Competency in this unit requires the ability to forecast from market data, identify generation unit availability and capability, prepare generation unit schedules and implement generation unit schedules. Individuals will, in general, work under supervision, in a power generation facility as an operator with responsibility for scheduling.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Forecast from market data	1.1 Information on all variables which have the potential to affect generation demand is obtained and employed to enable a forecast in accordance with workplace procedures 1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.3 Forecast prediction is based on the interpretation of relevant information in accordance with workplace procedures 1.4 Forecast outcomes are produced in a timeframe that enables electricity system security and operational criteria to be maintained in accordance with workplace procedures 1.5 Forecast prediction is continuously assessed against real time trends and adjustments are made in accordance with workplace procedures
2 Identify unit availability and capability	2.1 Information integrity is confirmed and deficiencies detected and rectified in accordance with workplace procedures 2.2 Information is processed and recorded in a timeframe that enables scheduling to take place in accordance with workplace procedures 2.3 Information on all factors which have the potential to affect generation unit status is obtained in accordance with workplace procedures 2.4 Communication is maintained with remote and independent power generators in accordance with workplace procedures 2.5 Power generation plant maintenance commitments are incorporated into setting priorities for committing generation units scheduling in accordance with workplace procedures 2.6 Generation plant testing commitments are incorporated into setting scheduling priorities for committing units in accordance with workplace procedures

- 2.7 Power station generation plant problems are accurately assessed for impact on generation unit commitments and scheduling requirements in accordance with workplace procedures
- 3 Prepare generation unit schedules**
- 3.1 Base load generation is scheduled in accordance with workplace procedures
- 3.2 Electricity system security criteria is applied and met in accordance with workplace procedures
- 3.3 Schedule is produced and applied to allow for power generation plant movements to occur within required timeframes in accordance with workplace procedures
- 4 Implement generation unit schedules**
- 4.1 Circumstances resulting in unexpected changes to demand are identified and managed in accordance with electricity system requirements and workplace procedures
- 4.2 Transmission system losses are identified and minimised in accordance with electricity system requirements and workplace procedures
- 4.3 Transmission and generation system status changes are identified and accommodated in accordance with electricity system requirements and workplace procedures
- 4.4 Fuel supply status changes are identified and accommodated in accordance with electricity system requirements and workplace procedures
- 4.5 Generation outputs are monitored in accordance with electricity system requirements and workplace procedures
- 4.6 Power generation plant problems are assessed and impact on generation unit scheduling and electricity system requirements in accordance with workplace procedures
- 4.7 Electricity system fault levels and transmission plant load levels are identified and not exceeded in accordance with electricity system requirements and workplace procedures
- 4.8 Scheduling of generation units is timed to optimise electricity system efficiency in accordance with

workplace procedures

- 4.9** Scheduling information is recorded and communicated to all stakeholders in accordance with electricity system requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS422 Schedule generation.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS132 Schedule generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safety working practices
- communicating with personnel
- distinguishing power generation plant status
- forecasting load profiles
- identifying scheduling plant to meet demand
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- preparing and implementing generation schedules
- recognising generation unit status including availability and capability
- scheduling generating units to maintain electricity system efficiency
- using data analysis techniques and tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant, including operating parameters
- electricity system operating instructions
- generation schedules
- generation unit status
- operating criteria including fuel strategies
- operation and loading characteristics of generation plant
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- schedule techniques
- scheduling plant and equipment, location and operating parameters
- WHS/OHS requirements, including:
 - emergency procedures
 - safety working practices and procedures
 - risk control measures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS133 Shut down a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct the shutdown of a boiler unit to a depressurised state.

A shutdown of a boiler unit will involve a series of steps to stop production, feed and fuel flows in a safe and controlled manner.

Competency in this unit requires the ability to plan and prepare boiler unit shutdown, conduct a shutdown, test boiler unit operation during shutdown, analyse boiler unit system faults during shutdown and complete documentation post-shutdown. Individuals will, in general, work under supervision in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare boiler unit shutdown work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on boiler unit plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Conduct boiler unit shutdown	2.1 Perform shutdown of boiler unit in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Boiler unit is cooled down and purged in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.3 Boiler unit is depressurised in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.4 Corrective actions are taken to rectify boiler unit abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test boiler unit plant operation	3.1 Tests are performed on boiler unit in accordance with workplace procedures
	3.2 Power generation system and boiler unit plant is observed for operational response in accordance with workplace procedures
	3.3 Boiler unit plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse and report on system faults during boiler unit shutdown	4.1 Causes of abnormal boiler unit plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Boiler unit plant integrity and personnel safety is

maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures

- 4.3** Relevant personnel are notified when defects are detected in accordance with workplace procedures

5 Complete documentation

- 5.1** Boiler unit plant problems, movements and status are reported in accordance with workplace procedures
- 5.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS410 Shut down a boiler unit

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS133 Shut down a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- identifying boiler unit plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and operating boiler unit plant and equipment
- organising resources
- performing shutdown of boiler unit
- planning shutdown boiler unit plant operation
- preparing boiler unit plant and equipment for operation
- responding to abnormal boiler unit plant operating conditions
- testing boiler unit plant operation using diagnostic data analysis techniques and tools to determine faults
- using recording procedures to complete documentation
- utilising cooling and depressurising techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- boiler cooling and depressurising techniques
- boiler operational processes

- boiler system components and interaction
- manuals
- permit to work system
- power generation unit plant
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- shutdown procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS134 Shut down a gas turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to shut down a gas turbine unit to a standby state.

Performing shutdown procedures for a gas turbine unit will require the implementation of power generation facility procedures and provisions, including manufacturers' recommendations and specifications, and worksite specific requirements.

Competency in this unit requires the ability to plan and prepare gas turbine shutdown, shut down a gas turbine, test gas turbine plant operation, analyse power generation system faults and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare gas turbine shutdown work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Operational checks are carried out on gas turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures 1.4 Team and individual roles and responsibilities are identified and recorded in the shutdown plan in accordance with workplace procedures
2 Conduct gas turbine shutdown	2.1 Gas turbine is unloaded and shutdown in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Gas turbine exhaust gas flow and power output are adjusted when gas turbine is a component of a combined unit to achieve required steam flow conditions in accordance with workplace procedures 2.3 Gas turbine and associated power generation plant is placed in a safe condition in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 Gas turbine plant is operated within limits of design during gas turbine shutdown in accordance with workplace procedures 2.5 Gas turbine plant is inspected and monitored to detect abnormal operating conditions during shutdown in accordance with workplace procedures 2.6 Corrective actions are taken to rectify gas turbine plant operation abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Inspect and test gas turbine plant operation during shutdown	3.1 Tests are performed on gas turbine plant in accordance with workplace procedures

	3.2	Gas turbine system and plant is observed for operational response in accordance with workplace procedures
	3.3	Corrective action is taken when operation response is not in accordance with shutdown work plan, plant integrity and safety requirements in accordance with workplace procedures
	3.4	Gas turbine plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse system faults during gas turbine shutdown	4.1	Causes of abnormal gas turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Gas turbine plant integrity and personnel safety is maintained and through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	4.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Gas turbine plant problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS408 Shut down a gas turbine

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS134 Shut down a gas turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing technical and operational information
- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying gas turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- inspecting and testing gas turbine plant operation using diagnostic and data analysis techniques and tools to determine faults
- interpreting manuals
- monitoring and operating gas turbine plant and equipment
- preparing gas turbine shutdown plan
- responding to abnormal gas turbine plant operating conditions
- shutting down a gas turbine plant, including planning gas turbine shutdown and organising resources
- using permit to work system
- working with gas turbine plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- fault-finding techniques
- gas turbine operating parameters

- manuals
- permit to work system
- principles and techniques of operation of a gas turbine and associated plant and equipment
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safety precautions associated with gas turbine shutdown
- sequence of gas turbine operations
- shutdown procedures
- technical and operational analysing techniques
- WHS/ OHS requirements, including:
 - emergency procedures
 - safe working practices
 - risk control measures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS135 Shut down a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to shut down an in-service heat recovery steam generator (HRSG) unit.

HRSGs are heat exchangers that retrieve heat from hot gas streams which is then supplied to steam turbines to generate additional electric power. Shutting down an HRSG unit, with or without supplementary firing, to a boxed-up condition will require the hot and cold gas outlet dampers to be closed and the steam water drum to be pressurised at a normal working level prior to a hot or warm restart, or to be in a depressurised state in preparation for a short or long outage.

Competency in this unit requires the ability to plan and prepare shutdown, operate plant during shutdown, test and analyse steam turbine system faults, and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS101 Operate and monitor HRSG hot gas control system

UEPOPS134 Shut down a gas turbine

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Preoperational checks are carried out on HRSG plant in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Operate HRSG plant during shutdown

- 2.1** Supplementary firing system is placed in and out of service in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Gas turbine exhaust gas flow and power output are adjusted to achieve required steam temperature, pressure and flow conditions in accordance with workplace procedures
- 2.3** Feedwater flows are adjusted to achieve required steam conditions and demand in accordance with workplace procedures
- 2.4** HRSG drains and vents are operated to depressurise and drain steam and/or water space and heat exchange elements in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.5** HRSG plant is maintained in required out-of-service condition in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.6** Boiler water quality is maintained within required parameters to prevent corrosion of drums, headers and heat exchange elements in accordance with workplace procedures
- 2.7** HRSG plant is operated within limits of design in

		accordance with workplace procedures
	2.8	HRSG plant is monitored in accordance with workplace procedures to detect deviations from required operating conditions
	2.9	Corrective action is taken to rectify HRSG plant abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test HRSG plant operation during shutdown	3.1	Tests are performed in accordance with workplace procedures
	3.2	Power generation system and HRSG plant are observed for operational response in accordance with workplace procedures
	3.3	HRSG plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Analyse system faults	4.1	Causes of abnormal HRSG plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	HRSG plant integrity and personnel safety are maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	4.3	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	HRSG plant problems, movements and status are reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS434 Shut down a heat recovery steam generator unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS135 Shut down a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislation, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying heat recovery steam generator (HRSG) plant status
- interpreting manuals
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- organising resources
- planning for HRSG plant shutdown
- preparing and operating HRSG plant and equipment
- responding to abnormal HRSG plant operating conditions
- shutting down HRSG plant operations
- testing HRSG plant operation using diagnostic and data analysis techniques and tools to determine faults
- using temperature and pressure reducing techniques and principles
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- control of steam temperature and pressure throughout full range of HRSG operation up to and including maximum continuous rating

- depressurisation and cooling
- HRSG gas path and water and steam circuits
- HRSG system components and the interaction of these components with other power generation plant and equipment
- manuals
- operation techniques for HRSG plant and equipment
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS136 Shut down a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a shutdown of a hydro turbine to where it can be placed at rest safely.

Shutdown of a hydro turbine will involve the operator making a sequence of checks prior to and during shutdown. This ensures that the shutdown of the turbine is completed in a safe and consistent manner.

Competency in this unit requires the ability plan and prepare hydro turbine shutdown, conduct a shutdown, test hydro turbine plant operation during shutdown, analyse hydro turbine system faults during shutdown and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Hydro turbine running-up and loading schedule are ascertained from documentation in accordance with workplace procedures
2 Conduct hydro turbine shutdown	2.1 Hydro turbine load is reduced in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Hydro turbine and alternator are removed from the system in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test and analyse hydro turbine plant operation during shutdown	3.1 Tests are performed in accordance with workplace procedures
	3.2 Power generation system and hydro turbine plant are observed for correct operational response in accordance with workplace procedures
	3.3 Causes of abnormal hydro turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
4 Complete documentation	4.1 Hydro turbine plant problems, movements and status are reported in accordance with workplace procedures
	4.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS445 Shut down a hydro turbine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS136 Shut down a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- conducting safe and controlled shutdown of hydro turbine plant and equipment
- identifying hydro turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- preparing hydro turbine plant and equipment for operation
- recognising and responding to abnormal plant operating conditions
- testing hydro turbine plant operationally using diagnostic and analysis techniques and to determine faults
- using recording procedures to complete documentation
- working with the permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydro power production plant
- hydro turbine operational processes
- hydro turbine plant and equipment, location and operating parameters
- hydro turbine plant system components and interaction
- hydro turbine supervision and control systems
- manuals

- online condition monitoring equipment and trends
- permit to work system
- power generation plant status
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- shutdown procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk mitigation control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS137 Shut down a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct a shutdown of a steam turbine to where it is placed at rest.

Shutdown of a steam turbine will involve the operator making a sequence of checks prior to and during shutdown. This ensures that the shutdown of the turbine is completed in a safe and consistent manner.

Competency in this unit requires the ability to plan and prepare steam turbine shutdown, conduct a shutdown, test steam turbine plant operation during shutdown, analyse system faults during shutdown and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare steam turbine shutdown work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Turbine shutdown schedule is identified from relevant documentation in accordance with workplace procedures
	1.4 Pre-shutdown checks are carried out on steam turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Conduct steam turbine shutdown	2.1 Steam turbine load is reduced in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Steam turbine and generator are removed from the steam generation system in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.3 Steam turbine is placed on turning gear in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.4 Steam turbine is cooled down on turning gear in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test steam turbine plant operation during shutdown	3.1 Tests are performed in accordance with workplace procedures
	3.2 Steam generation system and steam turbine plant is observed for operational response in accordance with workplace procedures
	3.3 Steam turbine plant is returned to operational status upon completion of testing in accordance with workplace procedures
4 Analyse and report on	4.1 Causes of abnormal steam turbine plant operating

system faults or status during steam turbine shutdown	conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2 Corrective action is taken in accordance with workplace procedures
	4.3 Steam turbine plant integrity and personnel safety is maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	4.4 Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1 Steam turbine plant problems, movements and status are reported in accordance with workplace procedures
	5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS419 Shut down a steam turbine.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS137 Shut down a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) regulations, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- identifying steam turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and operating steam turbine plant and equipment
- organising resources
- planning steam turbine plant work
- recognising and responding to abnormal plant operating conditions
- shutting down steam turbine plant and equipment
- testing plant operationally
- testing steam turbine plant operations using diagnostic and data analysis techniques and tools to determine faults
- using steam turbine cooling techniques and procedures
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- shutdown procedures
- steam turbine plant and equipment, location and operating parameters
- steam turbine system components and interaction with other power generation plant and equipment
- turbine operations
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS138 Start and run up gas turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for the purging, ignition and establishment of combustion and run-up of a gas turbine to operational and synchronous speed.

A gas turbine may be operated as an individual unit on open cycle or as a component of a combined cycle plant consisting of a gas turbine, heat recovery steam generator (HRSG) and steam turbine.

Competency in this unit requires the ability to plan and prepare work, conduct gas turbine start and run-up, test gas turbine plant, identify and respond to gas turbine plant operation, and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare gas turbine start and run-up work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on gas turbine plant in accordance with manufacturers' recommendations and specifications, and workplace procedures
2 Conduct gas turbine start and run-up	2.1 Preoperational conditions for gas turbine plant are established in accordance with workplace procedures
	2.2 Preoperational conditions of the HRSG, associated steam mains and steam turbine are established when gas turbine is a component of a combined unit in accordance with workplace procedures
	2.3 Starting procedures and correct purge, ignition and run-up sequence are commenced and observed in accordance with workplace
	2.4 Minimum operation of gas turbine is established and supported in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.5 Monitoring and control of HRSG drum level, feedwater flow, steam and metal temperature rates of rise, steam pressure rate of rise, steam flow and drainage are carried out where gas turbine is a component of a combined cycle unit in accordance with workplace procedures
	2.6 Gas turbine exhaust temperature and flow to HRSG and gas turbine power output are monitored and adjusted to achieve required steam conditions in accordance with workplace procedures
	2.7 Generating plant is operated within limits of design in accordance with workplace procedures
	2.8 Generating plant is monitored and observed to detect deviations from required operating conditions in

		accordance with workplace procedures
	2.9	Corrective action is taken to rectify gas turbine abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test gas turbine plant operation	3.1	Tests are performed in accordance with workplace procedures
	3.2	Power generation system and gas turbine plant is observed for correct operational response in accordance with workplace procedures
	3.3	Gas turbine plant is returned to required operational status upon completion of testing in accordance with workplace procedures
4 Identify, respond and report on gas turbine plant operation and anomalies	4.1	Causes of abnormal gas turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	4.2	Corrective action is taken in accordance with workplace procedures
	4.3	Gas turbine plant integrity and personnel safety are maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
	4.4	Relevant personnel are notified when defects are detected in accordance with workplace procedures
5 Complete documentation	5.1	Gas turbine plant problems, movements, and status reported in accordance with workplace procedures
	5.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS407 Start and run up gas turbine.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS138 Start and run up gas turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislation, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- conducting gas turbine plant and equipment for start and run-up operation
- identifying gas turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and operating gas turbine plant and equipment
- organising resources
- planning gas turbine work
- recognising and responding to abnormal gas turbine plant operating conditions
- starting, running-up and operating gas turbine and associated plant and equipment
- testing gas turbine plant operations using diagnostic and data analysis techniques and tools to determine faults
- using recording procedures to complete documentation
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power generation plant
- gas turbine critical operating parameters
- manuals

- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- safety precautions associated with a gas turbine start-up
- sequence of gas turbine operations
- techniques for operation of a gas turbine and associated plant and equipment
- WHS/OHS requirements, including:
 - risk control measures
 - emergency procedures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS139 Start and run up a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct safe hydro turbine run-ups to a stable operating condition.

Run-up of a hydro turbine will involve the operator making a sequence of checks prior to and during start-up. This ensures that loading the turbine is completed in a safe and consistent manner.

Competency in this unit requires the ability to plan and prepare hydro turbine, start and run-up hydro turbine, test and analyse hydro turbine system faults, and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored 1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures 1.3 Preoperational checks are carried out on hydro turbine plant in accordance with site requirements, manufacturers' recommendations and specifications, and workplace procedures 1.4 Turbine running-up and loading schedule are ascertained from relevant documentation in accordance with workplace procedures
2 Run up hydro turbine	2.1 Hydro turbine and alternator auxiliary systems are started up and hydro turbine is run up in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.2 Hydro turbine is monitored and observed to detect deviations from normal run-up operating conditions in accordance with workplace procedures 2.3 Corrective actions are taken to rectify hydro turbine abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.4 Alternator is synchronised and connected to electrical system in accordance with manufacturers' recommendations and specifications, and workplace procedures 2.5 Alternator is loaded in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test and analyse hydro turbine plant operation	3.1 Tests are performed in accordance with workplace procedures 3.2 Power generation system and hydro turbine plant are observed for operational response in accordance with workplace procedures

- 3.3** Causes of abnormal hydro turbine plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
- 4 Complete documentation**
 - 4.1** Hydro turbine plant problems, movements and status are reported in accordance with workplace procedures
 - 4.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS444 Start and run-up a hydro turbine.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS139 Start and run up a hydro turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- identifying hydro turbine plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- organising resources
- planning and preparing hydro turbine plant and equipment start and run-up operations
- recognising and responding to abnormal plant operating conditions
- testing hydro turbine plant operation using diagnostic and data analysis techniques and tools to determine faults
- using recording procedures to complete documentation monitoring and operating hydro turbine plant and equipment
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements for power generation plant
- hydro turbine system components and interaction
- manuals
- operational processes of hydro turbine
- permit to work system

- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- supervision and control system processes of hydro turbine
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS140 Start up a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to establish combustion in a boiler through to a stage at which combustion support energy is no longer necessary.

A boiler is a closed vessel in which water, under pressure, is converted into steam. Combustion is an important key to boiler operations; it occurs when oxygen combines with an element or compound to release heat.

Competency in this unit requires the ability to plan and prepare boiler unit start-up, conduct boiler unit - start-up, test and analyse boiler unit system faults, and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare boiler unit start-up work	1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks are carried out on boiler unit plant in accordance with manufacturers' recommendations and specifications and workplace procedures
2 Conduct boiler unit start-up	2.1 Boiler auxiliary systems are started up to support boiler unit start up, in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Pre-light up conditions for boiler unit are established in accordance with workplace procedures
	2.3 Combustion is established with fuel consumption kept at minimum levels in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.4 Fuel, air and feedwater flows are adjusted to achieve required steam conditions and demand in accordance with workplace procedures
	2.5 Boiler unit plant is operated within limits of design in accordance with workplace procedures
	2.6 Boiler unit plant is monitored to detect deviations from required operating conditions in accordance with workplace procedures
	2.7 Corrective actions are taken to rectify boiler unit abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Test boiler unit plant operation	3.1 Tests are performed in accordance with workplace procedures
	3.2 Power generation system and boiler unit plant is observed for correct operational response in accordance

- with workplace procedures
- 3.3** Boiler unit plant is returned to required operational status upon completion of testing in accordance with workplace procedures
- 4 Analyse system faults during boiler unit start-up**
- 4.1** Causes of abnormal boiler unit plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
- 4.2** Boiler unit plant integrity and personnel safety are maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
- 4.3** Relevant personnel are notified when defects are detected in accordance with workplace procedures
- 5 Complete documentation**
- 5.1** Boiler unit plant problems, movements, and status are reported in accordance with workplace procedures
- 5.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS409 Start up a boiler unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS140 Start up a boiler unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- employing temperature and pressure raising techniques
- identifying boiler unit plant status
- interpreting manuals
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- monitoring and operating boiler unit plant and equipment
- organising resources
- planning and preparing boiler unit plant and equipment for start and run-up operations
- recognising and responding to abnormal boiler unit plant operating conditions
- reviewing fuel consumption during boiler unit start-up
- starting, running-up and operating boiler unit and associated plant and equipment
- testing boiler unit plant operation using diagnostic and data analysis techniques and tools to determine faults
- using recording procedures to complete documentation
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- boiler system components and interaction with other plant and equipment
- boiler unit plant and equipment, location and operating parameters

- manuals
- permits
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- start-up procedures
- techniques of fuel combustion
- temperature and pressure raising requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS141 Start up a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to start up a heat recovery steam generator (HRSG) for service.

HRSG are recovery heat exchangers that retrieve the heat from hot gas streams which are then supplied to steam turbines to generate additional electric power. Placing an HRSG in-service will require the entry of a heating medium and the control of water within the steam and water drum. It includes monitoring the flow and quality of feedwater, steam pressure and temperature increases and metal temperatures within HRSG design limits so that the HRSG is supplying a constant flow of steam at the required temperature and pressure.

Competency in this unit requires the ability to plan and prepare start-up, operate HRSG plant during start-up, test and analyse HRSG system faults, and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEPOPS101 Operate and monitor HRSG hot gas control system

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare HRSG start-up work

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.3** Preoperational checks are carried out on plant in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Conduct HRSG start- up

- 2.1** Preoperational conditions of the HRSG and gas turbine are established in accordance with workplace procedures
- 2.2** Minimum operation of gas turbine is established and supported in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Monitoring of HRSG drum level, feedwater flow, steam and metal temperature rates of rise, steam pressure rate of rise and control of steam flow and drainage is carried out in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.4** Exhaust temperature, flow to HRSG and gas turbine power output are adjusted to achieve required steam conditions and demand in accordance workplace procedures
- 2.5** HRSG plant is operated within limits of design in accordance with workplace procedures
- 2.6** HRSG plant is monitored to detect deviations from required operating conditions in accordance with workplace procedures
- 2.7** Corrective action is taken to rectify HRSG abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures

3 Test HRSG plant operation

- 3.1** Tests are performed in accordance with workplace procedures

- 3.2 HRSG plant is observed for correct operational response in accordance with workplace procedures
 - 3.3 HRSG plant is returned to required operational status upon completion of testing in accordance with workplace procedures
- 4 **Analyse HRSG faults**
 - 4.1 Causes of abnormal HRSG plant operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
 - 4.2 HRSG plant integrity and personnel safety are maintained through consultation with relevant personnel and technical and operational documentation in accordance with workplace procedures
 - 4.3 Relevant personnel are notified when defects are detected in accordance with workplace procedures
- 5 **Complete documentation**
 - 5.1 HRSG plant problems, movements and status are reported in accordance with workplace procedures
 - 5.2 Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS432 Start up a heat recovery steam generator unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS141 Start up a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- identifying heat recovery steam generator (HRSG) plant status
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- monitoring and operating HRSG plant and equipment
- organising resources
- planning and preparing HRSG plant and equipment for start and run-up operations
- recognising and responding to abnormal HRSG plant operating conditions
- starting, running-up and operating HRSG and associated plant and equipment
- testing HRSG plant operation using diagnostic and data analysis techniques and tools to determine faults
- using recording procedures to complete documentation
- utilising temperature and pressure raising techniques
- working with permit to work system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- control of heat transfer and rate of temperature rise during HRSG start-up
- HRSG plant and equipment, location and operating parameters

- manuals
- operational testing of HRSG plant
- permit to work system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- techniques HRSG plant and equipment operation
- temperature and pressure raising requirements
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices and principles
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS142 Transport plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to transport power generation plant and equipment.

Road transport is used to move light or heavy materials, equipment and power generation plant from one location to another location.

Competency in this unit requires the ability to plan and prepare for power generation plant and equipment transportation, obtaining permits, loading and unloading power generation plant and equipment, securing load, operating transport vehicle and completing documentation. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for transportation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Transport requirements are confirmed from work scheduling in accordance with workplace procedures
 - 1.3** Characteristics of load are identified to ensure relevant loading and unloading procedures are followed in accordance with workplace procedures
- 2 Obtain transport permits**
- 2.1** Permit forms are completed in accordance with workplace procedures
 - 2.2** Load is assessed so as not to exceed safe working capacity of vehicle in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 3 Load/unload plant or equipment**
- 3.1** Vehicle is inspected prior to loading in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 3.2** Start-up, park-up and shutdown procedures are carried out on transport vehicle in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 3.3** Power generation plant and equipment is loaded and unloaded safely ensuring no injury to personnel and damage to property, equipment and load in accordance with workplace procedures
 - 3.4** Calculations on dimensions, including height and width of load and transport vehicle requirements, are made for oversized loads in accordance with workplace procedures
 - 3.5** Lashings are stored in transport vehicle in accordance with workplace procedures
 - 3.6** Load is secured to transport vehicle using relevant securing equipment and is lashed to anchorage points in accordance with securing systems, manufacturers' recommendations and specifications, and workplace procedures
- 4 Operate transport vehicle**
- 4.1** Preoperational checks are carried out on power generation plant in accordance with manufacturers' recommendations and specifications, and workplace

procedures

- 4.2 Attachments are set at correct height or position and transport vehicle is driven in accordance with traffic regulations, manufacturers' recommendations and specifications, and workplace procedures
 - 4.3 Start-up, park-up and shutdown procedures are carried out on transport vehicle in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 4.4 Hazards are identified and risk control measures are applied to transporting power generation plant and equipment on public roads and at worksite in accordance with workplace procedures
 - 4.5 Traffic regulations are followed in accordance with workplace procedures
- 5 Complete documentation**
- 5.1 Post-operational checks and minor maintenance is carried out on transport vehicle and accessories in accordance with manufacturers' recommendations and specifications, and workplace procedures
 - 5.2 Documentation is updated and transport vehicle abnormalities and status are reported in accordance with workplace

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS232 Transport plant and equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS142 Transport plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- completing documentation using recording procedures
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- complying with road transport permit requirements
- conducting prestart, start-up and shutdown procedures
- loading, offloading and transporting power generation plant and equipment
- operating and manoeuvring vehicles
- operational and maintenance procedures
- securing loads using lashing techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- lashing techniques
- loading and offloading procedures
- manuals
- power generation plant and equipment, location and operation
- prestart, start-up and shutdown procedures
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- road transport permits
- transport equipment capabilities and limitations

- transport operational and maintenance procedures
- WHS/OHS requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace policies and procedures
- workplace documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS143 Tune process plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to complete the investigation, nomination and adjustment of tuning parameters associated with power generation process plant and equipment

Tuning is a method in which one or more parameters of power generation plant and equipment are adjusted up or down to achieve an improved or specified result. Tuning will include testing and reviewing power generation process plant and equipment to identify faults.

Competency in this unit requires the ability to plan and prepare to tune generation process plant and equipment, test and implement process plant tuning, and complete documentation. Individuals will, in general, work under supervision as an operator, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Plan and prepare work

- 1.1** Tuning requirements for process plant and equipment are identified from relevant personnel and documentation in accordance with workplace procedures
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.3** Resource and equipment requirements are identified in accordance with workplace procedures
- 1.4** Process plant availability, capability and limitations are identified in accordance with workplace procedures
- 1.5** Testing and monitoring equipment are connected in accordance with process plant, manufacturers' recommendations and specifications, and workplace procedures
- 1.6** Initial operating state for process plant is maintained for testing in accordance with legislative requirements and workplace procedures
- 1.7** Test procedures are identified and recording documentation and equipment is prepared in accordance with workplace procedures
- 1.8** Testing equipment is calibrated in accordance with manufacturers' recommendations and specifications, and workplace procedures

2 Test plant and implement tuning

- 2.1** Field instrumentation and control elements are checked for calibration and operation in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.2** Testing and tuning are performed in accordance with manufacturers' recommendations and specifications, and workplace procedures
- 2.3** Variations are reassessed and accommodated to enable test objectives to be met in accordance with manufacturers' recommendations and specifications, and workplace procedures

- 2.4 Testing results are analysed and new settings for process plant are determined in accordance with workplace procedures
 - 2.5 Accuracy of test results is assessed through analysis of test data in accordance with workplace procedures
 - 2.6 Process plant is retuned to achieve outcomes in accordance with workplace procedures
- 3 **Complete documentation**
 - 3.1 Records are updated and documentation is retained in accordance with workplace procedures
 - 3.2 Changes to equipment operational settings are recommended to relevant personnel in accordance with workplace procedures
 - 3.3 Implementation of recommendations are monitored in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS511 Tune process plant and equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS143 Tune process plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing test results
- applying work health and safety (WHS)/occupational health and safety (OHS) legislated requirements, including:
 - emergency procedures
 - risk control measures
 - safety procedures
- communicating with personnel
- completing documentation using recording procedures
- coordinating testing operations using monitoring procedures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- locating process plant and equipment
- planning and preparing for tuning
- setting up and using testing or tuning equipment
- translating and using tuning parameters and settings
- using data analysis techniques and tools
- utilising testing and tuning techniques for process plant and equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- analysis methods and tools
- arrangements of power production plant
- manuals
- power generation process plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

- specifications, and environmental requirements
- tuning and testing techniques and processes
- tuning parameters and settings
- WHS/OHS requirements, including:
 - safety procedures
 - emergency procedures
 - risk control measures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS144 Undertake dam safety surveillance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct ongoing surveillance of water storage facilities to ensure structural integrity and water quality is maintained.

Hydropower relies on water stored in dams to create electricity, therefore, the structural integrity of dams is essential to the smooth operation of hydro power generation systems and plant.

Competency in this unit requires the ability to plan and prepare for work, undertake dam safety surveillance, sample and record water quality, and complete work. Individuals will, in general, work as an operator, in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work 1.1

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and

	workplace procedures are identified, applied and monitored
	1.2 Work requirements are identified from relevant personnel and site inspection in accordance with workplace procedures
	1.3 Resources are obtained and inspected for compliance in accordance with workplace procedures
	1.4 Potential hazards are identified and risk control measures selected and implemented in accordance with workplace procedures
	1.5 Work is sequenced and prioritised in accordance with workplace procedures
2 Conduct dam safety surveillance	2.1 Surveillance of dam structures is conducted in accordance with workplace procedures
	2.2 Recordings of dam leakage are reported to relevant personnel and external authorities in accordance with workplace procedures
	2.3 Special inspections are undertaken following abnormal dam events in accordance with workplace procedures
3 Sample and record water quality	3.1 Water samples are collected using relevant equipment and techniques in accordance with workplace procedures
	3.2 Water testing is performed using laboratory and field equipment in accordance with workplace procedures
	3.3 Water test results are recorded and abnormal results communicated to relevant personnel in accordance with workplace procedures
4 Complete work	4.1 Documentation is updated in accordance with workplace procedures
	4.2 Test equipment and tools are maintained and stored in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS328 Undertake dam safety surveillance.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS144 Undertake dam safety surveillance

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- identifying early warning signs and causes of dam failures
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- planning and preparing for work
- recognising early warning signs and causes of dam failures
- sampling, testing and recording water quality
- selecting and utilising equipment and materials to perform work
- undertaking dam safety surveillance, including using associated equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of hydroelectric generation plant
- dam types and characteristics
- early warning signs and causes of dam failures
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- water sampling collection and testing
- WHS/OHS requirements, including:

- emergency procedures
- risk control measures
- safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS145 Undertake local systems operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate power generating plant as a local systems operation, in conjunction with coordinated systems, under the control of relevant authorised personnel.

The operation, configuration and implementation of power generation systems and plant should be considered and reviewed when undertaking local systems operations.

Competency in this unit requires the ability to plan and prepare work, operate plant and complete work. Individuals will, in general, work as an operator, in a power generation facility.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes

- of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
- 1.2** Work requirements are identified from relevant personnel and documentation in accordance with workplace procedures
 - 1.3** Local system operations plant status is confirmed from instructions in accordance with workplace procedures
 - 1.4** Preoperational checks are carried out on local system operations plant from instructions in accordance with workplace procedures
- 2 Operate plant**
- 2.1** System components to be locally controlled are identified and operated from instructions in accordance with workplace procedures
 - 2.2** Local system operations plant is operated within limits of design specification in accordance with workplace procedures
 - 2.3** Local system operations plant is monitored, observed and tested to detect deviations from normal operating conditions in accordance with workplace procedures
- 3 Complete documentation**
- 3.1** Local system operations plant problems, movements, and status are reported in accordance with workplace procedures
 - 3.2** Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry – Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS252 Undertake local systems operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS145 Undertake local systems operations

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry – Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - emergency procedures
 - risk control measures
 - safe working procedures
- communicating with personnel
- completing documentation
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- fault testing and identification, including:
 - equipment running tests
 - post-maintenance operating tests
 - standby plant tests
- operating plant and equipment
- planning and preparing work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- fault test identification from standby plant, post-maintenance operating and equipment running tests
- operation of power generating plant and equipment in local systems operations
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- WHS/OHS requirements, including:
 - emergency procedures

- risk control measures
- safe working procedures
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS146 Operate and monitor hydro plant/systems

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Application

This unit involves the skills and knowledge required to operate and monitor hydro plant/systems in the electricity supply industry generation sector.

Routine work can include undertaking activities such as the operation of generation plant systems, operating and monitoring maintenance on equipment.

Competency in this unit requires the ability to carry out routine work activities in an electricity supply generation environment. Individuals will work, under supervision, as an operator in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Operations

Unit Sector

Electricity Generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate and monitor work activities

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work requirements for plant systems are identified from relevant personnel and documentation, in accordance with permit and workplace procedures

- 1.2 Initial check of plant systems to ensure work and requirements are in accordance with workplace procedures
 - 1.3 Work Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements', and workplace procedures are identified, applied and monitored
 - 1.4 Tools, equipment and Personnel Protective Equipment (PPE) are identified and checked, in accordance with workplace procedures
 - 1.5 Relevant personnel are consulted and work is coordinated on site, in accordance with workplace procedures
 - 1.6 Resources and materials are confirmed, in accordance with workplace procedures
 - 1.7 Schedule of work, including Safety Data Sheets (SDS), manual handling techniques and PPE are confirmed, in accordance with workplace procedures
- 2 **Carry out operate and monitor activities**
 - 2.1 Hazards are identified and risk controls are implemented, in accordance with workplace procedures
 - 2.2 Schedule of work for the plant is followed and work activities are completed, in accordance with workplace procedures
 - 2.3 Work practices for control room operations and monitoring are applied, in accordance with workplace procedures
 - 2.4 Alarm response and coordination from relevant personnel for unplanned events are applied, in accordance with workplace procedures
 - 2.5 Continuous checks on plant systems to ensure work and requirements are completed in accordance with workplace procedures
- 3 **Check completed operate and monitor activities**
 - 3.1 Final checks of plant systems to ensure work and requirements are completed in accordance with workplace procedures

- 3.2 Relevant personnel are notified of work completion, in accordance with workplace procedures
- 3.3 Tools, equipment, resources and materials are cleaned, checked and returned to storage, in accordance with workplace procedures
- 3.4 Work area is cleaned and made safe, in accordance with workplace procedures
- 3.5 Records are updated, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS146 Operate and monitor hydro plant/systems

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying alarm response including:
 - validation
 - priority and
 - escalations
- applying Work Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures and
 - safe working practices
- checking work results
- communicating with personnel
- completing lubrication, servicing and maintenance activities
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- dealing with unplanned events
- interpreting manufactures' specifications and manuals
- operating and monitoring plant systems
- preparing to undertake routine work activities
- using access permit and manual handling techniques
- using tools, resources and materials.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- alarm response including:
 - validation
 - priority and
 - escalations
- electrical supply industry routine tasks
- service and maintenance requirements
- manual handling techniques
- manuals
- operate and monitor plant systems
- access permit
- potential hazards
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- types of electricity generation plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS148 Operate and monitor local grid operations control room

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Application

This unit involves the skills and knowledge required to operate and monitor a grid operations control room in the electricity supply industry generation sector. This unit applies to proprietary grid infrastructure which may or may not be connected to the National grid.

Routine work can include undertaking activities such as the operation of generation plant systems, operating and monitoring maintenance on equipment.

Competency in this unit requires the ability to carry out routine work activities in an electricity supply generation environment. Individuals will work, under supervision, as an operator in an electricity supply generation facility.

No licensing, legislative or certification requirements apply to unit at the time of publication

Pre-requisite Unit

None

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate and

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work requirements for grid control room systems are identified from relevant personnel and documentation,

monitor work activities	in accordance with permit and workplace procedures
1.2	Initial check of grid control room systems to ensure work and requirements are in accordance with workplace procedures
1.3	Work Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements, and workplace procedures are identified, applied and monitored
1.4	Tools, equipment and Personnel Protective Equipment (PPE) are identified and checked, in accordance with workplace procedures
1.5	Relevant personnel are consulted, and work is coordinated on site, in accordance with workplace procedures
1.6	Resources and materials are confirmed, in accordance with workplace procedures
1.7	Schedule of work, including Safety Data Sheets (SDS), manual handling techniques and PPE are confirmed, in accordance with workplace procedures
2 Carry out operate and monitor activities	
2.1	Hazards are identified and risk controls are implemented, in accordance with workplace procedures
2.2	Schedule of work for grid control room is followed and work activities are completed, in accordance with workplace procedures
2.3	Work practices for grid control room operations and monitoring are applied, in accordance with workplace procedures
2.4	Alarm response and coordination from relevant personnel for unplanned events are applied, in accordance with workplace procedures
2.5	Response and coordination from relevant personnel for unplanned events are undertaken, in accordance with workplace procedures
2.6	Continuous checks on plant systems to ensure work and requirements are completed in accordance with

- workplace procedures
- 3 Complete operate and monitor activities**
- 3.1** Final checks of systems to ensure work and requirements are completed in accordance with workplace procedures
 - 3.2** Relevant personnel are notified of work completion, in accordance with workplace procedures
 - 3.3** Tools, equipment, resources, and materials are cleaned, checked and returned to storage, in accordance with workplace procedures
 - 3.4** Work area is cleaned and made safe, in accordance with workplace procedures
 - 3.5** Records are updated, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS148 Operate and monitor local grid operations control room

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying alarm response including:
 - validation
 - priority and
 - escalations
- applying Work Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures and
 - safe working practices
- checking work results
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- dealing with unplanned events
- interpreting manufactures' specifications and manuals
- managing screen based equipment including the full range of application.
- operating and monitoring grid control systems
- preparing to undertake routine work activities
- using access permits
- using tools, resources and materials.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- access permits
- alarm response including:
 - validation
 - priority and
 - escalations
- electrical supply industry routine tasks
- geographic impact on grid infrastructure
- jurisdictional operating protocols
- operate and monitor grid control systems
- potential hazards
- manuals
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- remote telemetry and data acquisition
- Supervisory Control and Data Acquisition (SCADA)
- types of electricity generation plants
- types of grid infrastructure
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment

(PPE) currently used in industry

- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS150 Operate and monitor multiple facilities from single control room

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Application

This unit involves the skills and knowledge required to operate and monitor multiple facilities from a single control room in the electricity supply industry generation sector.

Routine work can include undertaking activities such as the operation of generation plant systems, operating and monitoring maintenance on equipment.

Competency in this unit requires the ability to carry out routine work activities in an electricity supply generation environment. Individuals will work, under supervision, as an operator in an electricity supply generation facility.

No licensing, legislative or certification requirements apply to unit at the time of publication

Pre-requisite Unit

Not applicable

Competency Field

Operations

Unit Sector

Electricity Generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate and monitor work activities

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work requirements for electricity generation systems are identified from relevant personnel and documentation, in accordance with permit and

workplace procedures

- 1.2 Work Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements', and workplace procedures are identified, applied and monitored
 - 1.3 Tools, equipment and Personnel Protective Equipment (PPE) are identified and checked, in accordance with workplace procedures
 - 1.4 Relevant personnel are consulted, and work is coordinated on site, in accordance with workplace procedures
 - 1.5 Resources and materials are confirmed, in accordance with workplace procedures
 - 1.6 Schedule of work, including Safety Data Sheets (SDS), manual handling techniques and PPE are confirmed, in accordance with workplace procedures
 - 1.7 Electronic monitoring and data reporting devices are identified and checked, in accordance with workplace procedures
- 2 Carry out operate and monitor activities**
 - 2.1 Hazards are identified and risk controls are implemented, in accordance with workplace procedures
 - 2.2 Schedule of work for plant is followed and work activities are completed, in accordance with workplace procedures
 - 2.3 Work practices for control room operations and monitoring are applied, in accordance with workplace procedures
 - 2.4 Alarm response and coordination from relevant personnel for unplanned events are applied, in accordance with workplace procedures
 - 2.5 Continuous checks on plant systems to ensure work and requirements are undertaken in accordance with workplace procedures
- 3 Completed operate and monitor activities**
 - 3.1 Final checks of systems to ensure work and requirements are completed in accordance with

workplace procedures

- 3.2 Relevant personnel are notified of work completion, in accordance with workplace procedures
- 3.3 Tools, equipment, resources and materials are cleaned, checked and returned to storage, in accordance with workplace procedures
- 3.4 Work area is cleaned and made safe, in accordance with workplace procedures
- 3.5 Records are updated, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS150 Operate and monitor multiple facilities from single control room

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying alarm response including:
 - validation
 - priority and
 - escalations
- applying protocols and procedures between control rooms
- applying Work Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures and
 - safe working practices
- checking work results
- communicating with personnel
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- dealing with unplanned events
- interpreting manufacturers' specifications and manuals
- operating and monitoring electricity generation systems
- preparing to undertake routine work activities
- using access permit and manual handling techniques
- using tools, resources and materials.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- access permits
- alarm response including:
 - validation
 - priority and
 - escalations
- electrical supply industry routine tasks
- manuals
- operate and monitor electricity generation systems
- operational protocols with third parties.
- potential hazards
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications and environmental requirements
- remote telemetry and data acquisition
- Supervisory Control and Data Acquisition (SCADA)
- types of electricity generation plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures
- operational protocols with third parties

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry

- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPOPS152 Operate Renewable Energy Generation and Storage systems

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Application

This unit involves the skills and knowledge required to Operate Renewable Energy Generation and Storage systems in the electricity supply industry generation sector.

Routine work can include undertaking activities such as the operation of generation plant systems, operating and monitoring maintenance on equipment.

Competency in this unit requires the ability to carry out routine work activities in an electricity supply generation environment. Individuals will work, under supervision, as an operator in a generation facility.

No licensing, legislative or certification requirements apply to unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Operations

Unit Sector

Electricity Generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate and monitor work activities

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work requirements for electricity generation systems are identified from relevant personnel and documentation, in accordance with permit and

workplace procedures

- 1.2 Work Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements', and workplace procedures are identified, applied and monitored
 - 1.3 Tools, equipment and Personnel Protective Equipment (PPE) are identified and checked, in accordance with workplace procedures
 - 1.4 Relevant personnel are consulted and work is coordinated on site, in accordance with workplace procedures
 - 1.5 Resources and materials are confirmed, in accordance with workplace procedures
 - 1.6 Schedule of work, including Safety Data Sheets (SDS), manual handling techniques and PPE are confirmed, in accordance with workplace procedures
- 2 Carry out operate and monitor activities**
 - 2.1 Hazards are identified and risk controls are implemented, in accordance with workplace procedures
 - 2.2 Schedule of work for the plant is followed and work activities are completed, in accordance with workplace procedures
 - 2.3 Work practices for control room operations and monitoring are applied, in accordance with workplace procedures
 - 2.4 Alarm response and coordination from relevant personnel for unplanned events are applied, in accordance with workplace procedures
 - 2.5 Continuous checks on plant systems to ensure work and requirements are undertaken in accordance with workplace procedures
- 3 Completed operate and monitor activities**
 - 3.1 Final checks of systems to ensure work and requirements are completed in accordance with workplace procedures
 - 3.2 Relevant personnel are notified of work completion, in accordance with workplace procedures

- 3.3 Tools, equipment, resources and materials are cleaned, checked and returned to storage, in accordance with workplace procedures
- 3.4 Work area is cleaned and made safe, in accordance with workplace procedures
- 3.5 Records are updated, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS152 Operate Renewable Energy Generation and Storage systems

Modification History

Release 1. This is the first release of this unit of competency in the Electricity Supply Industry - Generation Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying alarm response including:
 - validation
 - priority and
 - escalations
- applying Work Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment (PPE)
 - risk control measures and
 - safe working practices
- checking work results
- communicating with personnel
- completing lubrication, servicing and maintenance activities
- complying with regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- dealing with unplanned events
- interpreting manufactures' specifications and manuals
- operating and monitoring electricity generation systems
- preparing to undertake routine work activities
- using access permit and manual handling techniques
- using tools, resources and materials.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- alarm response including:
 - validation
 - priority and
 - escalations
- electrical supply industry routine tasks
- service and maintenance requirements
- manual handling techniques
- manuals
- operate and monitor electricity generation systems
- access permit
- potential hazards
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements'
- types of power generation plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - personal protective equipment
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

BSBHRM413 Support the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup.

The unit applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Human Resources

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Contribute to needs development	1.1 Collect information on performance of team members from relevant sources 1.2 Identify individual and team learning and development needs in line with organisational requirements 1.3 Confirm learning plans meet individual and group training and development needs 1.4 Provide opportunities to individuals to self-evaluate performance and identify areas for improvement
2. Support implementation of	2.1 Develop collaborative learning plans to match skill needs of individuals and groups and match the competency standards

ELEMENT	PERFORMANCE CRITERIA
learning and development	relevant to the industry 2.2 Ensure learning delivery methods are relevant to the participants 2.3 Identify and coordinate workplace learning opportunities to facilitate individual and team achievement of competencies 2.4 Identify and manage resources and timelines relevant for learning activities according to organisational requirements
3. Monitor and evaluate workplace learning	3.1 Monitor learning plans to improve the efficiency and effectiveness of learning 3.2 Seek feedback from individuals or teams to identify and implement improvements in future learning arrangements 3.3 Assess and record outcomes and performance of individuals and teams to determine the effectiveness of development programs and the extent of additional development support 3.4 Document and maintain records and reports of competency according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Uses structured approaches to set goals, monitor progress and adjust learning approaches for self and others • Builds on knowledge and experience to facilitate interaction and learning with others
Reading	• Analyses textual information from a range of sources to identify organisational requirements • Analyses information from a range of sources to evaluate performance
Writing	• Develops materials to suit the requirements of different roles and individuals in the organisation • Maintains records using correct technical and organisational vocabulary
Oral Communication	• Uses vocabulary appropriate to context and to establish a supportive and learning environment • Uses listening and questioning techniques to confirm or show understanding of different perspectives • Selects and uses appropriate conventions and protocols when communicating with co-workers in a range of work contexts

SKILL	DESCRIPTION
Self-management	• Recognises and responds to explicit and implicit organisational procedures and protocols • Understands how own role meshes with others and contributes to broader goals
Teamwork	• Recognises the importance of building rapport to establish effective working relationships • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction • Negotiates with others to achieve agreeable outcomes playing an active role in facilitating consensus in potentially contentious situations
Problem solving	• Uses logical planning processes to organise, implement and monitor learning and development needs • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Evaluates outcomes of decisions to identify opportunities for improvement

Unit Mapping Information

Supersedes and is equivalent to BSBLED401 Develop teams and individuals.

Supersedes but is not equivalent to:

- BSBFLM311 Support a workplace learning environment
- BSBLED301 Undertake e-learning.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBHRM413 Support the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- contribute to, facilitate and monitor learning and development for at least one team and for at least one individual.

In the course of the above, the candidate must:

- collect data on team and individual and team development needs
- collaboratively develop learning plans to match skill needs of individuals and groups
- coordinate learning opportunities
- give and receive feedback during the implementation of learning plans
- monitor and review workplace learning plan implementation plans.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- facilitation techniques to support team development and improvement
- organisational policies, plans and procedures for developing teams
- career paths and competency standards relevant to the industry
- key sources of information relevant to inform development needs
- key features of learning and development methods.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- learning and development plans, policies and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBHRM523 Coordinate the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to coordinate the learning and development of teams and individuals. Particular emphasis is on the coordination of strategies to facilitate and promote learning and to monitor and improve learning performance.

The unit applies to individuals who have a role in coordinating the development of a learning environment in which work and learning come together. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision-making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Human Resources

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Coordinate creation of learning opportunities	1.1 Identify potential formal and informal learning opportunities 1.2 Identify learning requirements of teams and individuals according to requirements of organisation and available learning opportunities 1.3 Coordinate implementation of learning plans and ensure that learning plans reflect diversity of needs 1.4 Review relevant organisational procedures and ensure they

ELEMENT	PERFORMANCE CRITERIA
	support individual and team access to learning opportunities, where required 1.5 Consult with training and development specialists and use their advice to contribute to learning opportunities
2. Coordinate learning	2.1 Coordinate strategies to ensure workplace learning opportunities are used by teams and individuals 2.2 Coordinate implementation of policies and procedures to encourage team members to assess their own competencies and identify their own learning and development needs 2.3 Communicate benefits of learning with others in the team and organisation 2.4 Recognise workplace achievement by relevant recognition, feedback and rewards
3. Monitor and improve learning effectiveness	3.1 Monitor team and individual learning performance to determine type and extent of any additional work-based support required 3.2 Use feedback from individuals and teams to identify and recommend improvements in future learning arrangements 3.3 Suggest adjustments, negotiated with training and development specialists, for improvements to learning 3.4 Record and report learning and development of teams and individuals

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Interprets textual information obtained from a range of sources and determines how content may be applied to individuals and to organisational requirements
Writing	- Uses information from a range of sources to develop and document plans, strategies and feedback according to organisational requirements - Maintains records using correct technical and organisational vocabulary
Oral Communication	- Present information and opinions using language and features appropriate to the audience and context - Uses questioning and listening techniques to identify learning needs and obtain feedback
Initiative and	Recognises and responds to both explicit and implicit organisational procedures and protocols and legislative and regulatory requirements

SKILL	DESCRIPTION
enterprise	Understands how own role meshes with others and contributes to broader goals
Teamwork	- Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role - Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion - Recognises the importance of building rapport to establish effective working relationships - Applies a range of communication strategies to encourage others to share their knowledge and skills and reflect on the effectiveness of the interaction
Problem solving	- Uses logical processes to plan, implement and monitor learning in the workplace - Systematically gathers and analyses relevant information and evaluates options to make informed decisions
Technology	Uses digital tools to organise, store, integrate and share relevant information

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to BSBLED501 Develop a workplace learning environment.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBHRM523 Coordinate the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- coordinate learning and development for at least one team and for at least one individual.

In the course of the above, the candidate must:

- liaise with training and development specialists
- recognise workplace achievement by giving feedback, recognition and rewards
- monitor and recommend improvements for workplace learning
- record and report workplace learning outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- how management of relationships can achieve a learning environment
- principles and techniques involved in the management and organisation of:
 - adult learning
 - coaching and mentoring
 - consultation and communication
 - improvement strategies
 - leadership
 - learning environment and learning culture
 - monitoring and reviewing workplace learning
 - problem identification and resolution
 - record keeping and management methods
 - structured learning
 - work-based learning.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- relevant organisational policies and procedures
- workplace equipment and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBINS402 Coordinate workplace information systems

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement and review workplace information systems. It involves identification, collection, initial analysis and use of information.

The applies to individuals whose work will normally be carried out within methods and procedures which require planning and evaluation, leadership and guidance of others, and some discretion and judgement.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Information Services

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify and review information needs	1.1 Identify information required by relevant stakeholders 1.2 Review information requirements to determine suitability, accessibility, currency and reliability of information according to organisational policies and procedures
2. Collect, analyse and report information	2.1 Collect information which is adequate and relevant to the requirements of relevant stakeholders 2.2 Confirm information is in a format suitable for analysis, interpretation and distribution 2.3 Analyse information, identify and report relevant trends according to the requirements for which it was collected

ELEMENT	PERFORMANCE CRITERIA
3. Implement information systems	3.1 Implement information systems effectively to store, retrieve and regularly review information for decision making purposes 3.2 Use technology available in the work area to manage information effectively 3.3 Recommend improvements to information system to relevant stakeholders
4. Support information system continuous improvement	4.1 Collect data about information system future needs in consultation with relevant stakeholders 4.2 Confirm identified information system future needs reflect the organisation's business plans 4.3 Assist development of proposals for continuous improvement of information system 4.4 Distribute information to relevant stakeholders on information system changes, where required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	Critically analyses documentation from a variety of sources and consolidates information
Writing	Develops information for a specific audience using clear and detailed language
Oral Communication	Uses active listening and questioning to convey and clarify information and to confirm understanding
Numeracy	Selects from and uses mathematical strategies to perform initial analysis on information
Planning and organising	Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Teamwork	Cooperates with others and contributes to work practices where joint outcomes are expected and deadlines are to be met
Problem solving	Contributes to continuous improvement of current work practices by applying basic principles of analytical thinking
Technology	Uses digital technologies and systems to access, enter, present and distribute information

Unit Mapping Information

Supersedes and is equivalent to BSBINM401 Implement workplace information system.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBINS402 Coordinate workplace information systems

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- distribute information to relevant stakeholders in response to three different workplace information needs
- implement and review a workplace information system on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key aspects of workplace information systems including:
 - budgets and financial management systems
 - customer information software or records
 - databases
 - product and service information
 - project management software
 - record management systems
 - spreadsheets.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a workplace information system
- organisational policies and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBINS501 Implement information and knowledge management systems

Modification History

Release	Comments
Release 2	This version first released with the Business Services Training Package Version 8.0. Typographical error in Foundation Skills corrected.
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to organise training for an information and knowledge management system and to implement the use of the system.

The unit applies to individuals who are responsible for ensuring relevant information and corporate knowledge are retained, accessible and improve business outcomes.

It applies to information and knowledge management systems that comprise policies, protocols, procedures and practices to manage information or knowledge within the organisation and among relevant stakeholders.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Information Services

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Implement use of management system	1.1 Identify legislative requirements, and organisational policies and procedures

ELEMENT	PERFORMANCE CRITERIA
	1.2 Implement information and knowledge management system according to legislative requirements and organisational policies and procedures 1.3 Address implementation issues and problems, where required 1.4 Collect information on relevant key performance indicators 1.5 Identify contingencies and refer technical specialist help, where required
2. Organise learning to use management systems	2.1 Identify learning requirements of relevant stakeholders for use of an information and knowledge management system 2.2 Identify and secure resources required for learning activities to use an information and knowledge management system 2.3 Organise and facilitate learning activities 2.4 Promote and support use of the system throughout the organisation 2.5 Monitor and document effectiveness of learning activities
3. Review use of management system	3.1 Analyse effectiveness of system and report on strengths and limitations of the system 3.2 Recommend improvements to information and knowledge management system, where required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Writing	Prepares and produces documentation for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	- Presents information using structure and language to suit the audience - Uses active listening and questioning and reading of verbal and non-verbal signals to clarify information and to confirm understanding
Self-management	Takes responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation
Teamwork	- Collaborates with others, sharing information to build strong work groups and avoid behaviours that are not conducive to a productive environment - Elicits feedback and provides feedback to others in order to improve

Skill	Description
	self or workgroup behaviours
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities
Problem solving	• Applies systematic and analytical processes to address problems and make decisions in complex situations
Initiative and enterprise	• Investigates new and innovative ideas to continuously improve, work practices and processes
Technology	• Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others

Unit Mapping Information

Supersedes and is equivalent to BSBINM501 Manage an information or knowledge management system.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBINS501 Implement information and knowledge management systems

Modification History

Release	Comments
Release 2	This version first released with the Business Services Training Package Version 8.0. Typographical error in Foundation Skills corrected.
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement and review one information management system
- implement and review one knowledge management system
- facilitate learning on both these information and knowledge management systems.

In the course of the above, the candidate must:

- identify learning needs and plan and implement learning activities to enable personnel to use information and knowledge management system
- monitor performance and address issues and contingencies as they arise including:
 - accessing technical specialists, as required
 - applying correct policies and procedures for the information or knowledge management system
 - evaluating effectiveness of information or knowledge management system for intended outcomes
- recommend improvements to systems, policies and practices, where required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- relevant legislation, regulation, standards and codes
- organisational policies and procedures, including those related to:
 - information management
 - knowledge management

- organisational operations and existing data and information systems
- relevant learning activities and key performance indicators.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulation, standards and codes relevant to information and knowledge management
- workplace systems, documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBLDR301 Support effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to gather information and support effective relationships and networks, with particular regard to communication and representation.

The unit applies to individuals who use leadership skills to support the development of teams and help facilitate communication between team members.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Gather information and ideas	1.1 Identify information on work roles and objectives of work team 1.2 Locate and communicate to work team organisational processes for communication and teamwork 1.3 Establish scope of own role 1.4 Seek contributions for refining ideas and approaches to teamwork and communication according to organisational processes 1.5 Identify and consult with team members on potential work-related issues
2. Develop team relationships and networks	2.1 Encourage communication within team according to organisation's social, ethical and business policies and procedures

ELEMENT	PERFORMANCE CRITERIA
	2.2 Adjust interpersonal styles and methods in relation to the organisation's social and cultural environment 2.3 Identify and use workplace networks to help build relationships 2.4 Identify and describe the value of networks and other work relationships for the team and the organisation
3. Contribute to positive team outcomes	3.1 Identify issues to be rectified within own level of responsibility and according to organisational and legal requirements 3.2 Support colleagues in resolving work difficulties related to own level of responsibility, according to organisational and legal requirements 3.3 Review team outcomes and implement improvements in consultation with relevant personnel 3.4 Contribute constructively to conflict resolution according to organisational policies and processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	Applies textual information to determine regulatory requirements and adhere to job processes and internal policies
Writing	- Uses appropriate language to record key information related to the outcomes of the job - Varies writing style to meet requirements of audience and purpose
Oral Communication	- Speaks clearly using tone and pace appropriate for the audience and purpose - Uses appropriate techniques, including active listening and questioning, to clarify information and to confirm understanding
Initiative and enterprise	Takes personal responsibility for adherence to explicit and implicit organisational policies, procedures, standards and legislative requirements within own job role and in all interactions with others
Teamwork	- Adjusts personal communication style in response to diversity of individuals in the work context - Implements strategies to respond appropriately to conflict and poor work performance
Planning and organising	Takes responsibility for planning, sequencing and prioritising tasks for own workload

Technology	• Uses familiar digital technologies and systems to access, present and communicate information

Unit Mapping Information

Supersedes and is equivalent to BSBFLM303 Contribute to effective workplace relationships.

Supersedes but is not equivalent to BSBEDU302 Assist in resolution of issues and incidents in an international education environment.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBLDR301 Support effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- support the development of at least one team
- facilitate communication between individuals on at least two occasions.

In the course of the above, the candidate must:

- adjust interpersonal style and communications to respond to cultural and social diversity
- apply relationship management and communication skills with a range of people that:
 - demonstrate integrity, respect, empathy and cultural sensitivity and promote trust
 - forge effective relationships with internal and/or external people and help to maintain these networks
 - encourage participation and foster contribution of and respect for ideas and feedback
 - provide support to colleagues to resolve difficulties
- communicate ideas and information to diverse audiences.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- internal and external sources of information to improve organisational processes
- social and ethical requirements, and organisational policies and procedures relevant to communication
- legislative requirements relevant to communication
- strategies required to adapt communication for diverse audiences
- potential team issues including poor work performance
- examples of how work relationships and the cultural and social environment can support or hinder achieving planned outcomes
- techniques for developing positive work relationships and building trust and confidence in a team

- methods and techniques for communicating information and ideas to a range of stakeholders
- common problem-solving methods
- common methods to resolve workplace conflict
- process for monitoring, analysing and introducing ways to improve work relationships
- value of networks and work relationships for the team and the organisation
- own level of responsibility.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to workplace relationships.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills, knowledge and outcomes required to use leadership to promote team cohesion. It includes motivating, mentoring, coaching and developing the team and forming the bridge between the management of the organisation and team members.

The unit applies to team leaders, supervisors and new or emerging managers where leadership plays a role in developing and maintaining effective workplace relationships. It applies in any industry or community context. At this level work will normally be carried out within routine and non-routine methods and procedures, which require planning, evaluation, leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to lead workplace relationships	1.1 Identify work team objectives according to organisational strategy 1.2 Collect and analyse information for the achievement of work task 1.3 Share ideas and information with relevant internal and external stakeholders according to work task 1.4 Develop strategy for completion of work task in collaboration with work team

ELEMENT	PERFORMANCE CRITERIA
2. Lead workplace relationships	2.1 Identify and implement methods to facilitate collaboration to complete work task 2.2 Support colleagues experiencing difficulties fulfilling work requirements 2.3 Manage conflict constructively within the organisation's processes and parameters of own role 2.4 Communicate work progress to relevant internal and external stakeholders
3. Review leadership	3.1 Seek feedback on relationship management for work task from relevant stakeholders 3.2 Analyse feedback on relationship management 3.3 Evaluate personal performance in leading workplace relationships 3.4 Identify areas of improvement for leading workplace relationships future work tasks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	Collects, analyses and evaluates textual information from a range of resources to inform improvement strategies
Oral Communication	Selects or adjusts communication style to maintain effectiveness of interaction and build and maintain engagement consistent with organisational requirements
Initiative and enterprise	Identifies and follows legislative and organisational requirements relevant to own role
Teamwork	- Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders - Adapts personal communication style to build trust and positive working relationships and to show respect for the opinions, values and particular needs of others - Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others
Planning and	Plans and implements activities and processes to manage and review work performance

organising	• Systematically gathers and analyses all relevant information to formulate and evaluate possible solutions to difficulties

Unit Mapping Information

Supersedes and is equivalent to BSBLDR402 Lead effective workplace relationships.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- lead effective workplace relationships on at least four occasions with different individuals or groups.

In the course of the above, the candidate must:

- access and analyse information required to achieve planned outcomes
- collaborate with work team to develop and implement a work task strategy
- apply techniques for resolving problems and conflicts, and dealing with poor performance according to organisational and legislative requirements
- monitor and communicate work progress to relevant internal and external stakeholders
- seek and review feedback to improve workplace leadership.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- considerations for communicating information including audience cultural and social diversity
- consultation processes including internal and external sources of consultees
- impacts of relationships, cultural and social environment, in supporting or hindering the achievement of planned outcomes
- techniques for developing positive work relationships and building trust and confidence in a team, including:
 - interpersonal styles
 - communications
 - consultation
 - cultural and social sensitivity
 - networking

- impact of legislation and organisational policies on workplace relationships
- techniques for communicating information and ideas to a range of stakeholders
- common methods to resolve workplace conflict
- common methods to manage poor work performance
- common methods to monitor, analyse and improve work relationships.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations, standards and codes relevant to performance evidence
- workplace documentation and resources
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBLDR414 Lead team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills, knowledge and outcomes required to lead the performance of a team and to develop team cohesion.

The unit applies team leaders, supervisors and new emerging managers who have an important leadership role in the development of efficient and effective work teams. Leaders at this level also provide leadership for the team and bridge the gap between the management of the organisation and the team members. As such they must 'manage up' as well as manage their team/s.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan team outcomes	1.1 Lead team to identify and establish team objectives and work processes 1.2 Support team to document identified objectives and work processes according to organisational processes 1.3 Encourage team members to incorporate innovation and productivity measures in work plans 1.4 Lead and support team members to meet expected outcomes
2. Promote team cohesion	2.1 Provide opportunities for input of team members into planning, decision making and operational aspects of work team

ELEMENT	PERFORMANCE CRITERIA
	2.2 Support team members to take responsibility for own work and to assist each other in undertaking required roles and responsibilities 2.3 Provide feedback to team members on their efforts and contributions 2.4 Address or refer issues, concerns and problems identified by team members 2.5 Model expected behaviours and approaches
3. Supervise team performance	3.1 Encourage team members to participate in and take responsibility for team activities and communication processes 3.2 Support team to identify and resolve problems which impede performance 3.3 Ensure own contribution to work team serves as a role model for others
4. Liaise with management	4.1 Establish open communication with line management 4.2 Communicate information from line management to the team 4.3 Communicate unresolved issues, concerns and problems raised by the team to line management to action 4.4 Communicate issues raised by management to the team to action

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Writing	Prepares workplace plans that communicate intent and elicits feedback clearly and effectively
Oral communication	Engages in discussions or provides information using structure and language appropriate to the audience and situation
Teamwork	- Selects and uses appropriate conventions and protocols when communicating with team members - Adapts personal communication style to model required behaviours, build trust and positive working relationships and to show respect for the opinions and values of others - Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others

Planning and organising	• Develops, implements and monitors plans and processes to ensure team engagement and effectiveness • Uses formal analytical thinking techniques to identify issues and generate possible solutions, seeking input from others, as required

Unit Mapping Information

Supersedes and is equivalent to BSBLDR403 Lead team effectiveness.

Supersedes but is not equivalent to BSBSMB407 Manage a small team.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBLDR414 Lead team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a team development plan, that addresses:
 - innovation and productivity measures
 - team cohesion
 - issues management and actions.

In the course of the above, the candidate must:

- apply knowledge of organisational goals, objectives and plans to work tasks
- communicate with team members and management to identify and establish team purpose, roles, responsibilities, goals plans and objectives and resolve problems
- consult, encourage, support and provide feedback to team members
- model team leadership behaviours and approaches.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- work processes, including team purpose, roles, responsibilities, goals and plans
- organisational escalation policies and procedures
- behaviours which enhance organisational image for work team, clients and customers
- processes for setting goals that contribute to team effectiveness
- effects of individual behaviour on team effectiveness
- innovation and productivity measures in work plans
- key features of common leadership styles.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- information about the organisation, including organisational structure, goals, objectives and plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBLDR522 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.
Release 2	This version first released with BSB Business Services Training Package Version 7.1. Release created to amend typographical error with performance criteria.

Application

This unit describes the skills and knowledge required to manage the performance of staff that are direct reports.

The unit applies to individuals who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback. The unit makes the link between performance management and performance development and reinforces both functions as a key requirement for effective managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Allocate work	1.1 Consult relevant groups and individuals on work to be allocated and resources available 1.2 Develop work plans and allocate work according to organisational requirements and operational plans 1.3 Develop and confirm performance standards and key

ELEMENT	PERFORMANCE CRITERIA
	performance indicators with relevant staff 1.4 Conduct risk analysis according to organisational risk management plan and legal requirements
2. Assess performance	2.1 Review performance management and processes according to legislation, organisational objectives and policies 2.2 Train participants in the performance management and review process 2.3 Conduct performance management according to organisational policies procedures and relevant timelines 2.4 Monitor and evaluate performance according to performance standards and key performance indicators
3. Provide feedback	3.1 Provide informal feedback and coaching to staff 3.2 Advise relevant personnel, where performance is poor and take necessary actions 3.3 Document feedback according to the organisational performance management system 3.4 Conduct formal structured feedback sessions as necessary and according to organisational policy
4. Manage follow up	4.1 Develop performance improvement and development plans according to organisational policies 4.2 Monitor underperforming individuals according to organisational policies 4.3 Respond to underperforming individuals, as required 4.4 Reinforce excellence in performance through recognition and continuous feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	Consolidates and improves own knowledge and skills by coaching, mentoring or training others
Reading	Gathers, interprets and analyses texts in organisational documents to facilitate performance management
Writing	Plans and prepares documents for allocating work and managing performance suitable for the target audience and in accordance with organisational requirements

Oral Communication	• Uses language and structure appropriate to context and audience to explain expected standards of performance, provide feedback and coach staff
Self-management	• Applies legal and regulatory responsibilities related to own work and the organisation as a whole • Adheres to organisational policies and procedures
Teamwork	• Applies the protocols governing what to communicate to whom and how in a range of work contexts • Collaborates with others to achieve joint outcomes, influencing direction and taking a leadership role on occasion
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Seeks advice, feedback and support, as required to assist in the decision-making process • Uses experiences to reflect on the ways in which variables impact on performance

Unit Mapping Information

Supersedes and is equivalent to BSBMGT502 Manage people performance.

Supersedes but is not equivalent to:

- BSBMGT404 Lead and facilitate off-site staff
- BSBSLS502 Lead and manage a sales team.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBLDR522 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage performance of at least two individuals
- manage performance of at least one team.

In the course of the above, the candidate must:

- consult with stakeholders to identify work requirements, performance standards and agreed performance indicators
- develop work plans and allocate work to achieve outcomes efficiently and within organisational and legal requirements
- assess performance against performance indicators according to performance management and review processes
- monitor, evaluate and provide feedback on performance and provide coaching or training, as needed
- keep records and documentation in accordance with the organisational performance management system
- reinforce excellence in performance through recognition and continuous feedback
- respond to underperforming individuals according to organisational policies, as required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory and organisational requirements for performance management and review
- organisational risk management plan
- organisational human resource support services
- organisational performance measurement systems
- key features of unlawful dismissal rules and due process

- staff development options and information.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation on performance management
- workplace documentation and resources for performance management and review.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS203 Deliver a service to customers

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to deliver aspects of customer service at an introductory level. It includes creating a relationship with customers, identifying their needs, delivering services or products, and processing customer feedback.

The unit applies to those who perform a range of routine tasks in the workplace using a limited range of practical skills and fundamental knowledge of customer service in a defined context under direct supervision or with limited individual responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish contact with customers	1.1 Greet customers according to organisational requirements 1.2 Share relevant information with customers 1.3 Identify and respond to specific customer requirements 1.4 Express interest in customer needs and develop rapport with customer
2. Identify customer needs	2.1 Ask questions to identify customer needs 2.2 Assess customer needs for urgency and identify priorities for service delivery 2.3 Provide customer with information about available options

ELEMENT	PERFORMANCE CRITERIA
	2.4 Assess limitations in addressing customer needs and seek assistance from designated persons, where required
3. Provide service to customers	3.1 Confirm details of service and delivery with customer according to organisational requirements 3.2 Convey information regarding problems and delays, and follow-up within appropriate timeframes, where required 3.3 Identify opportunities to enhance the quality of service and products, and take action to improve the service
4. Process customer feedback	4.1 Seek customer feedback and handle according to organisational and legislative requirements 4.2 Record feedback and communication between customer and the organisation according to organisational requirements 4.3 Identify any unmet customer needs and discuss suitability of alternative products or services 4.4 Encourage customers to maintain contact with organisation for future needs

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	- Identifies requirements from organisational policy and procedure documents - Interprets product and service information in a range of formats to provide customer advice
Writing	Records customer information according to organisational requirements
Oral communication	- Provides information and advice using structure and language to suit the audience - Asks questions and listens to gain information and confirm understanding
Planning and organising	Follows organisational procedures and practices relevant to own role
Teamwork	- Uses accepted communication practices to establish connections, build rapport and develop professional working relationships - Adjusts personal communication style in response to the opinions, values and needs of others

Skill	Description
Initiative and enterprise	Identifies opportunities to enhance work practices and outcomes
Problem solving	Addresses routine problems in familiar work contexts

Unit Mapping Information

Supersedes and is equivalent to BSBCUS201 Deliver a service to customers.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS203 Deliver a service to customers

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deliver a service to at least three different customers.

In the course of the above, the candidate must:

- greet the customer and establish rapport according to organisational requirements
- identify customer needs using interpersonal skills
- provide prompt service to address customer needs
- identify and follow up opportunities to increase the quality of service and products
- respond to and record all customer feedback according to organisational standards, policies and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key provisions of customer service legislation and consumer law
- requirements for responding to the needs of customers from a diverse background
- workplace organisational policies and procedures relating to customer service and the customer service process.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documents, and organisational policies and procedures for customer service
- examples of customer complaints and feedback.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS301 Maintain business resources

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to determine, administer and maintain resources and equipment to complete a variety of tasks.

The unit applies to those who apply a broad range of competencies in various work contexts. They may exercise discretion and judgement using appropriate theoretical knowledge of business resources and their basic maintenance to provide some technical advice and support to a team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Advise on resource requirements	1.1 Calculate current business resource needs according to organisational requirements 1.2 Calculate estimates of future business resource needs according to organisational requirements 1.3 Provide advice on equipment, material and supplier selection 1.4 Identify resource shortages and possible impact on operations
2. Acquire resources	2.1 Obtain resources according to timelines and identified organisational requirements 2.2 Store resources according to identified organisational requirements

ELEMENT	PERFORMANCE CRITERIA
	2.3 Review resource acquisition processes and identify opportunities for improvements in future resource acquisitions
3. Monitor resource usage and maintenance	3.1 Confirm handling of resources is according to organisational and work health and safety requirements 3.2 Identify resource monitoring tool and monitor use of resources 3.3 Consult individuals and teams and facilitate effective decision-making on the appropriate allocation of resources 3.4 Monitor and compare resource usage with estimated requirements in budget plans

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	Identifies and interprets information from a range of sources, including organisational policies and procedures
Writing	Uses clear and succinct language and appropriate layout to provide information, advice and support materials
Oral communication	- Presents information or advice choosing language appropriate to the context and needs of the audience - Uses active listening and questioning to confirm understanding
Numeracy	- Selects and uses appropriate tools to aid with estimation and other resource assessment requirements - Uses a combination of informal and some formal written mathematical equations to represent the outcomes of the resource allocation process
Enterprise and initiative	Takes some personal responsibility for adherence to organisational procedures and protocols
Teamwork	Uses collaborative techniques to engage personnel in consultations and negotiations
Planning and organising	- Plans a range of routine tasks and required resources, accepting goals and aiming to achieve them within allocated timeframes - Evaluates effectiveness of decisions in terms of how well they met stated goals
Problem solving	Identifies and takes responsibility for addressing predictable problems in familiar work contexts

Skill	Description
Technology	- Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role - Identifies purpose and some specific functions of some common digital tools used in work contexts

Unit Mapping Information

Supersedes and is equivalent to BSBADM311 Maintain business resources.

Supersedes but is not equivalent to BSBFLM306 Provide workplace information and resourcing plans.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS301 Maintain business resources

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- maintain at least three business resources.

In the course of the above, the candidate must:

- collect and record data on resource use
- evaluate use of resources according to organisational requirements
- monitor resource use over defined and operational timeframes
- comply with organisational policies while using resources.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key provisions of legislation relating to maintaining business resources
- organisational resource acquisition policies, plans and procedures
- organisational requirements for handling resources including:
 - acquiring resources
 - storing resources
- organisational procedures for record keeping and filing systems, security and safe recording practices.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational resource use data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS402 Coordinate business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement operational plans by planning and acquiring resources, monitoring and adjusting operational performance and providing reports on performance, as required.

The unit applies to individuals who plan activities to achieve team and organisational objectives. At this level, work will normally be carried out within routine and non-routine methods and involve procedures that require planning, evaluation, leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to implement operational plan	1.1 Consult with stakeholders to identify resource requirements relevant to operational plan 1.2 Collate, analyse and document details of resource requirements 1.3 Develop operational plan and determine implementation method 1.4 Plan for contingencies 1.5 Develop and present proposals for resource requirements
2. Implement operational plan	2.1 Assist in recruiting and onboarding employees required to implement operational plan according to organisational policies

ELEMENT	PERFORMANCE CRITERIA
	and procedures 2.2 Acquire physical resources and services according to organisational policies and procedures 2.3 Support efficient, cost-effective and safe use of resources 2.4 Adjust implementation of the operational plan in consultation with others to manage contingencies
3. Monitor operational performance	3.1 Collate relevant information and determine operational and productivity performance 3.2 Identify and use key performance indicators (KPIs) and assess operational performance 3.3 Identify unsatisfactory performance and take action to rectify the situation according to organisational policies
4. Review operations based on performance	4.1 Develop recommendations for variation to operational plans 4.2 Present recommendations to the designated persons or groups to gain approval 4.3 Maintain records related to operational performance according to organisational policies and procedures 4.4 Report information on operational performance to management

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	Identifies, interprets, analyses and reviews textual information related to the operational plan and monitoring of operational performance
Writing	- Communicates relationships between ideas and information, matching style of writing to purpose and audience - Researches, plans and prepares workplace documentation for relevant stakeholders using organisational formats
Oral communication	Participates in a variety of spoken exchanges with a range of audiences varying structure and language to suit the audience
Numeracy	Selects and uses familiar mathematical techniques to organise timely supply of adequate resources for the operational plan and to use budgetary information to monitor performance
Enterprise and initiative	Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment

Skill	Description
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse individuals to build rapport, seek or present information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group communication, influencing direction and taking a leadership role on occasion
Planning and organising	• Takes responsibility for planning, organising, implementing and monitoring tasks required to achieve required outcomes • Evaluates effectiveness of decisions in terms of how well they met stated goals • Identifies and addresses an increasing range of familiar problems by implementing contingency plans

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBFLM305 Support operational plan
- BSBMGT402 Implement operational plan.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS402 Coordinate business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare, implement and review two operational plans.

In the course of the above, the candidate must:

- interact with a range of people and groups to identify resource requirements, performance objectives, systems, procedures and records relating to the operational plan
- plan and acquire physical and human resources using organisation's systems and procedures
- manage and support personnel to achieve performance objectives including facilitating new employee onboarding
- present information and recommendations to support implementation and variation of the operational plan
- monitor operational performance against the performance objectives and budgets and implement improvements to rectify unsatisfactory performance
- vary the operational plan and gain approval to deal with contingencies
- document and provide reports on performance as required by the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- processes to identify resource requirements
- sources of information to identify resource requirements
- methods to manage contingencies including through consultation with relevant stakeholders
- key features of performance monitoring systems and processes
- common methods for problem solving
- methods to support staff including mentoring, coaching and supervision

- implementation methods for operational plan
- budget and other financial information related to the organisation
- organisational objectives including costs, identified shortfalls and surpluses.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational operational plans, policies and procedures relevant to performance evidence
- workplace documentation and resources including budgets
- physical and human resource procurement documentation
- employee onboarding and performance monitoring procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS404 Implement customer service strategies

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to advise, carry out and evaluate customer service strategies.

The unit applies to individuals who have well developed skills and a broad knowledge of customer service strategies for addressing customer needs and problems. Individuals may provide guidance or delegate work related tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Advise on customer service needs	1.1 Identify organisational customer service objectives and customer needs 1.2 Assess and clarify customer requirements 1.3 Identify and diagnose problems with service delivery 1.4 Develop options to improve customer service delivery according to organisational requirements 1.5 Provide recommendations to promote improvement of customer service delivery
2. Support implementation of customer service	2.1 Consult with relevant stakeholders to develop customer service strategies 2.2 Assess customer service strategies and opportunities against

ELEMENT	PERFORMANCE CRITERIA
strategies	customer service objectives 2.3 Identify and allocate available budget resources to fulfil customer service objectives 2.4 Action procedures to resolve customer difficulties and complaints according to organisational requirements
3. Evaluate and report on customer service	3.1 Review stakeholder satisfaction with service delivery according to organisational requirements 3.2 Identify and report changes necessary to meet customer service objectives 3.3 Prepare conclusions and recommendations on future directions of client service strategies 3.4 Monitor systems, records and reporting procedures for changes to customer satisfaction

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	Reviews textual information and comprehends details that relate to the interests or requirements of the client and organisation
Writing	Creates a range of formal texts using structure, grammar and clear and specialised language to describe customer needs, maintain information and support a particular position
Oral communication	Uses pace, intonation, intelligible pronunciation and listening and questioning techniques to interact effectively with others
Numeracy	Recognises and interprets numerical information and performs calculations on familiar mathematical information
Enterprise and Initiative	Recognises and applies organisational protocols and meets expectations associated with own work
Teamwork	- Uses a range of strategies to establish a sense of connection and build rapport with customers - Collaborates with others contributing knowledge and skills to achieve joint outcomes
Planning and organising	- Applies formal and logical processes when planning and implementing tasks - Applies standard procedures when responding to familiar problems

Skill	Description
	within own work context
Technology	• Uses digital technologies to access, organise, present and store information relevant to own role

Unit Mapping Information

Supersedes and is equivalent to BSBCUS401 Coordinate implementation of customer service strategies.

Supersedes but is not equivalent to:

- BSBCUS402 Address customer needs
- BSBCUS403 Implement customer service standards
- BSBSLS408 Present, secure and support sales solutions.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS404 Implement customer service strategies

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement at least two strategies to improve customer service delivery.

In the course of the above, the candidate must:

- respond to and report on customer feedback and complaints
- review client satisfaction using verifiable data
- consult and communicate effectively with relevant people
- develop and implement strategies and methods to improve customer service delivery, including:
 - budgeting
 - promotion to staff
 - documentation and follow up.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- customer communication techniques
- principles of customer service
- sources of verified client information
- techniques for identifying customer needs and reviewing customer satisfaction
- organisational business structure, products and services related to customer service
- techniques for drawing insights from verifiable evidence to develop recommendations and conclusions
- product and service standards and best practice models.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational policies and procedures for customer service
- examples of customer complaints and feedback
- client satisfaction data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS502 Manage business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to develop and monitor the implementation of operational plans to support efficient and effective workplace practices and organisational productivity and profitability.

The unit applies to individuals who manage the work of others and operate within the parameters of a broader strategic and/or business plans.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish operational plan	1.1 Research, analyse and document resource requirements 1.2 Develop operational plan in consultation with, and with approval from, relevant stakeholders 1.3 Develop contingencies for operational plan 1.4 Explain plan to relevant work teams
2. Manage resource acquisition	2.1 Confirm that employees are recruited and inducted according to the organisation's human resources management policies, practices and procedures 2.2 Confirm that physical resources and services are acquired according to the organisation's policies, practices and procedures

ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify and incorporate requirements for intellectual property rights and responsibilities related to acquisition of resources
3. Monitor and review operational performance	3.1 Assess progress of operational plan in achieving profit and productivity plans and targets 3.2 Identify areas of under-performance, recommend solutions and rectify the situation 3.3 Plan and implement relevant processes for ongoing monitoring and confirm that support is provided for individuals and teams 3.4 Negotiate recommendations for variations to operational plans and gain approval from designated persons

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	Gathers, interprets and analyses workplace documentation to determine requirements for the operational plan
Writing	Develops and documents a range of detailed texts relating to the management of an operational plan according to organisational requirements
Oral communication	- Presents information to a range of audiences using appropriate register, vocabulary and paralinguistic features - Listens and comprehends information from a variety of spoken exchanges with clients, co-workers and other stakeholders
Numeracy	Selects and uses mathematical problem-solving strategies to organise resource requirements, performance benchmarks and financial viability of the operational plan
Enterprise and initiative	Monitors adherence to organisational policies, procedures and considers own role in terms of its contribution to broader goals of the work environment
Teamwork	Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion
Planning and organising	- Takes responsibility for developing and implementing systems and processes to achieve organisational objectives, seeking advice, feedback and support as required to assist in the development and planning phase - Sequences and schedules complex activities, monitors

Skill	Description
	implementation, and manages relevant communication
Problem solving	• Uses systematic analytical processes to aid decision making, identify potential problems and generate contingency plans or solutions
Technology	• Demonstrates awareness of the importance of data security in a digital environment

Unit Mapping Information

Supersedes and is equivalent to BSBMGT517 Manage operational plan.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS502 Manage business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage an operational plan for at least one business or work area.

In the course of the above, the candidate must:

- develop and implement an operational plan using a variety of information sources and consultation including:
 - resource requirements
 - key performance indicators
 - monitoring processes
 - contingency plans
- communicate with stakeholders to explain the plan and supporting information, seek approvals, negotiate variations and engage work teams
- confirm existence of relevant strategies, including strategies relating to:
 - recruiting, inducting and developing personnel
 - acquiring physical resources and services
 - protecting intellectual property
 - making variations to the plan
 - monitoring and documenting performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- stakeholders involved in development and management of operations plan including escalation points, colleagues and specialist resource managers
- key information sources for proposal development and presentation including resource requirement specialists

- consultation processes
- content of operational plans, including:
 - procurement processes
 - employee recruitment and induction strategies
 - physical resource and service acquisition strategies
 - key indicators of organisational performance
- budget and actual financial relating to profit and productivity
- methods for preparing operational plans and contingency plans
- role of an operational plan in achieving an organisation's objectives
- procedures and records associated with documenting performance
- approaches for developing key performance indicators to meet business objectives
- legislative and regulatory framework relating to the development and implementation of operational plan of the organisation, including:
 - fair trading laws
 - work health and safety
- organisational policies, practices and procedures that relate to the operational plan.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation and regulations relevant to operational plans
- workplace documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBOPS505 Manage organisational customer service

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.

The unit applies to individuals who supervise customer service provided by others within an organisation. At this level, individuals must exercise considerable discretion and judgement, using a range of problem solving and decision making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish customer requirements	1.1 Consult with customers to identify customer service requirements 1.2 Integrate customer feedback into organisation's business plan 1.3 Identify and procure resources required to address customer service requirements
2. Deliver quality products and services	2.1 Deliver product and service according to customer specifications within organisation's business plan 2.2 Monitor team performance and assess against the organisation's quality and delivery standards 2.3 Support colleagues to overcome difficulties in meeting

ELEMENT	PERFORMANCE CRITERIA
	customer service standards
3. Evaluate customer service	3.1 Develop and use strategies for monitoring progress against product and service targets and standards 3.2 Develop and use strategies for obtaining customer feedback on provision of product and service 3.3 Adapt delivery of customer product and service in consultation with relevant individuals and groups 3.4 Manage records, reports and recommendations within the organisation's systems and processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	Interprets and analyses textual information from a variety of sources and applies the knowledge that has been gained to evaluate standards for organisation's products and services
Writing	Produces a range of text types to convey information, requirements or recommendations matching style of writing to purpose and audience
Oral communication	- Clearly articulates systems and standards in a team environment using language suitable to diverse audiences - Uses listening and questioning techniques to obtain feedback and confirm understanding
Numeracy	Interprets and comprehends mathematical information in organisation's business and customer service plans
Planning and organising	Recognises and applies organisational protocols and meets expectations associated with own work
Teamwork	- Identifies and uses appropriate conventions and protocols when communicating with colleagues and customers - Collaborates with others, taking into account their strengths and experience, to achieve desired outcomes - Provides support in field of expertise to team
Enterprise and initiative	Develops and implements plans using logical processes and monitors and evaluates progress against stated goals
Problem solving	Accepts responsibility for addressing complex or non-routine difficulties, applying problem solving processes in determining a

Skill	Description
	solution
Technology	• Uses digital technology to access, organise and present information in a format that meets requirements

Unit Mapping Information

Supersedes and is equivalent to BSBCUS501 Manage quality customer service.

Supersedes but is not equivalent to:

- BSBCUE504 Integrate customer engagement within the organisation
- BSBCUE601 Optimise customer engagement operations
- BSBCUE602 Manage customer engagement information
- BSBCUE603 Design and launch new customer engagement facilities
- BSBSLS501 Develop a sales plan.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBOPS505 Manage organisational customer service

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and review strategy for delivering and monitoring quality customer service for an organisation or work area.

In the course of the above, the candidate must:

- implement quality customer service policies and procedures
- identify and resolve system problems relating to poor customer service
- assist teams to meet customer service requirements
- develop, procure and use human and physical resources to support quality customer service delivery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory frameworks governing customer service
- elements of effective customer service including quality, time and cost
- organisational policies and procedures for customer service and handling customer complaints
- relevant service standards and best practice models
- key principles of public relations and product promotion
- common techniques for solving complaints
- principles and techniques involved in managing:
 - customer behaviour
 - specific customer needs
 - customer research
 - customer relations

- ongoing product and service quality
- problem identification and resolution
- quality customer service delivery
- record keeping and management methods
- strategies for monitoring, managing and introducing ways to improve customer service relationships
- strategies to obtain customer feedback.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations and codes of practice related to customer service
- workplace documentation and resources
- complex customer complaints.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBPEF301 Organise personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.
Release 2	This version first released with BSB Business Services Training Package Version 7.2. Release created to amend typographical error in the foundation skills.

Application

This unit describes the skills and knowledge required to organise personal work schedules, to monitor and obtain feedback on work performance and to maintain required levels of competence.

The unit applies to individuals who exercise discretion and judgement and apply a broad range of competencies in various work contexts.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Organise and complete own work schedule	1.1 Develop work goals and key performance indicators (KPIs) according to task and organisational requirements 1.2 Prioritise workload according to task timeframes 1.3 Identify factors affecting achievement of work objectives 1.4 Develop personal work plans
2. Evaluate own work	2.1 Identify variations between expected and actual work

ELEMENT	PERFORMANCE CRITERIA
performance	performance according to task requirements and KPIs 2.2 Report variations to relevant personnel 2.3 Seek feedback from relevant personnel for solutions to minimise variations in expected and actual work outputs 2.4 Research sources of stress and access appropriate supports according to organisational policies and procedures
3. Coordinate personal skill development and learning	3.1 Identify personal and professional development needs for job role 3.2 Identify opportunities to undertake personal skill development activities in consultation with supervisor 3.3 Access professional development opportunities 3.4 Record professional development undertaken for continuous learning and career development process 3.5 Incorporate feedback into review of further learning needs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	Employs a range of approaches and investigative techniques to source the knowledge necessary to arrange personal learning experiences
Reading	Interprets textual information to determine organisation's procedures, own work performance and objectives
Writing	Prepares written reports and workplace documents that communicate information clearly and effectively
Oral communication	- Provides and receives feedback using specific and relevant language - Uses listening and questioning techniques to confirm understanding
Self-management	Complies with organisational policies, procedures and protocols
Teamwork	- Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role - Proactively collaborates with others to achieve specific goals
Planning and organising	- Plans and organises work commitments to ensure deadlines and objectives are met - Uses formal analytical thinking techniques to recognise and respond to routine problems

Skill	Description
Technology	• Uses digital systems and tools to enter, store and monitor information

Unit Mapping Information

Supersedes and is equivalent to BSBWOR301 Organise personal work priorities and development.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBPEF301 Organise personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.
Release 2	This version first released with BSB Business Services Training Package Version 7.2. Release created to amend typographical error in the foundation skills.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and implement a personal work plan.

In the course of the above, the candidate must:

- prepare a work plan according to organisational requirements and work objectives
- use technology to schedule, prioritise and monitor completion of tasks in a work plan
- assess and prioritise own work tasks and address contingencies
- monitor and assess personal performance against job role requirements by seeking feedback from relevant personnel
- identify personal development needs and access, complete and record skill development and learning.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational policies and procedures relevant to work tasks
- goals, objectives and key performance indicators for task within scope of job role
- methods to elicit, analyse and interpret feedback when communicating with other people in the workplace
- content of work plans including:
 - timeframes
 - tasks requirements

- risks
- contingencies for identified risks
- types of personal learning and professional development requirements
- principles and techniques of goal setting, measuring performance and time management
- signs and sources of stress and strategies to deal with stress in the workplace
- methods to identify and prioritise personal learning needs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- challenges and situations to demonstrate application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBPEF402 Develop personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to plan and prioritise own work tasks. It also addresses the skills and knowledge to monitor and obtain feedback on personal work performance.

The unit applies to individuals who are required to design their own work schedules and work plans and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan personal work schedule	1.1 Identify task requirements 1.2 Identify own accountabilities in line with task requirements 1.3 Assess barriers for performance of personal accountabilities 1.4 Develop a personal work schedule
2. Implement personal work schedule	2.1 Communicate personal work schedule to relevant personnel 2.2 Monitor own performance according to personal work schedule 2.3 Document variations between expected and actual work performance according to task requirements and communicate to relevant personnel

ELEMENT	PERFORMANCE CRITERIA
3. Review personal work priorities	3.1 Seek and evaluate feedback from relevant stakeholders on own work performance 3.2 Analyse variations between expected and actual work performance 3.3 Update personal work schedule according to internal and external feedback and changes in circumstances

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	Develops strategies to reflect on own performance and obtain feedback
Reading	Identifies and applies textual information from relevant sources to understand organisation's policies and practices
Writing	Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Numeracy	Analyses numerical information related work accountabilities
Enterprise and initiative	Identifies and understands roles and responsibilities in relation to organisational objectives, policies and procedures
Planning and organising	- Plans, organises and implements tasks to meet organisational requirements - Uses the main features and functions of digital technologies and tools to complete work tasks efficiently and effectively

Unit Mapping Information

Supersedes and is equivalent to BSBWOR404 Develop work priorities.

Supersedes but is not equivalent to:

- BSBSMB408 Manage personal, family, cultural and business obligations
- BSBWOR424 Develop a time management plan.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBPEF402 Develop personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop, implement and review one personal work schedule.

In the course of the above, the candidate must:

- identify personal responsibilities and barriers to their fulfilment according to task requirements
- prepare a personal work schedule
- communicate work schedule to relevant personnel
- monitor personal work performance to identify variations between expected and actual work performance
- review own work performance against workgroup objectives through self-assessment and seeking and acting on feedback from internal and external stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- content of work plans including:
 - resource requirements
 - stakeholder needs
 - workgroup targets
- business technology applications to schedule tasks and plan work
- methods of personal work performance review including:
 - self-assessment
 - feedback from others
- techniques to prepare personal plans and establish priorities
- methods to elicit, analyse and interpret feedback.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to challenges and situations to demonstrate the application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBPPEF501 Manage personal and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement systems and process that support the personal and professional development of self and others.

The unit applies to individuals working in a range of managerial positions who are accountable for the development and performance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Manage work goal development	1.1 Document team member responsibilities and identify organisational framework for development of work goals 1.2 Support others to develop work goals, plans and activities that align with their responsibilities 1.3 Assess others' work goals, plans and activities for alignment with organisational goals and provide feedback to team members 1.4 Facilitate access to personal and professional development opportunities that align to team member goals, plans and activities
2. Facilitate achievement of work priorities	2.1 Assess and prioritise personal, team and organisational demands 2.2 Use technology to manage work priorities of the team

ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify and implement techniques to manage team health and wellbeing in the workplace
3. Develop and maintain professional competence	3.1 Document own development needs, priorities and plans using applicable competency standards, where required 3.2 Seek feedback from relevant personnel on own development needs 3.3 Participate in personal and professional development activities that address identified needs, priorities and plans

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	Investigates and uses a range of strategies to develop personal competence
Reading	Analyses and interprets textual information from organisational policies and practices or feedback to inform personal development planning
Writing	Uses feedback to prepare reports that summarise ways to improve competence
Oral communication	Uses active listening and questioning to seek and receive feedback
Enterprise and Initiative	- Identifies how own role contributes to broader organisational goals - Considers organisational protocols when planning career development of self and others
Teamwork	- Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders - Uses interpersonal skills to establish and build positive working relationships with others
Planning and organising	- Plans and prioritises tasks in order to meet deadlines, manage role responsibilities and to manage own personal welfare - Identifies and uses appropriate technology to improve work efficiency
Technology	Uses technology to manage and prioritise work tasks

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBLED503 Maintain and enhance professional practice
- BSBWOR501 Manage personal work priorities and professional development.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBPEF501 Manage personal and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement a plan for own personal and professional development
- manage personal and professional development of at least two other individuals.

In the course of the above, the candidate must:

- identify roles and responsibilities of team members
- support two different individuals to develop work goals that align with their role and responsibilities
- facilitate team member access to relevant personal and professional development activities
- use technology to organise and prioritise tasks and commitments of a team or work area
- research and implement techniques for maintaining health and wellbeing of self and others
- develop personal work goals, plans and activities to meet work goals
- measure personal work performance, including assessing competency against competency standards
- participate in personal and professional development activities to develop professional competence.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- roles and responsibilities of team members
- principles and techniques involved in the management or organisation of:
 - performance measurement
 - personal behaviour, self-awareness and personality traits identification
 - personal development plans
 - personal goal setting

- task prioritisation
- common personal and professional development activities relevant to the industry
- technology to plan and prioritise work tasks
- techniques to manage health and wellbeing in the workplace
- organisation's human resources policies and procedures relevant to professional development.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to challenges and situations to demonstrate the application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBSTR301 Contribute to continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to support continuous improvement in an organisation. Particular emphasis is on actively encouraging teams to participate in the process, monitoring and reporting on specified outcomes and supporting opportunities for further improvements.

The unit applies to individuals who use initiative, and organisational and communication skills to influence the ongoing development of the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Coordinate continuous improvement	1.1 Communicate objectives and continuous improvement processes of the organisation to team members 1.2 Establish roles and skills within the team and identify training needs and performance improvement opportunities 1.3 Encourage team members to participate in decision making processes and exercise initiative
2. Monitor and report specified outcomes	2.1 Monitor team progress using systems and technology of the organisation and identify ways planning and operations could be improved 2.2 Report changes to processes and training to relevant

ELEMENT	PERFORMANCE CRITERIA
	stakeholders 2.3 Develop plans, in collaboration with team members, to apply continuous improvement techniques and processes
3. Support opportunities for further improvement	3.1 Communicate recommendations for improvements in achieving organisational objectives to team members 3.2 Monitor work performance and support team members to identify further opportunities for improvement 3.3 Maintain records, reports and recommendations for improvement within the organisation's systems and processes

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	Contributes to ongoing organisational improvement by mentoring others to support continuous improvement processes
Reading	Interprets everyday workplace documentation
Writing	Uses appropriate vocabulary and grammatical structures to achieve precise meaning in a range of documentation
Oral communication	- Articulates information in a positive manner using appropriate terminology, tone and style appropriate to context and audience - Uses questioning and listening techniques to exchange and clarify information
Enterprise and initiative	- Identifies the nature and purpose of own role and associated responsibilities and how own role relates to others and contributes to broader work goals - Takes responsibility for adherence to organisational processes and systems
Teamwork	Shares information and resources, offers assistance and facilitates effective group interactions
Planning and organising	- Takes responsibility for routine low-impact decisions within familiar situations - Evaluates effectiveness of decisions in terms of how well they meet stated goals
Technology	Uses a range of digitally based technology and applications to organise, monitor, manage and communicate relevant information effectively

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBFLM309 Support continuous improvement systems and processes
- BSBINN201 Contribute to workplace innovation.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBSTR301 Contribute to continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- coordinate, monitor and support the continuous improvement of a work task for a team or work area.

In the course of the above, the candidate must:

- identify options and benefits for improvements
- address barriers to continuous improvement
- use analysis work performance to identify improvement opportunities
- use technology to monitor operational progress
- apply recordkeeping processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles and techniques relating to:
 - continuous improvement systems and processes
 - benchmarking
 - best practice
- benefits and barriers to continuous improvement
- quality approaches that may be implemented in an organisation
- methods that can be used in continuous improvement
- organisational recording, reporting and recommendation processes.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documents and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBSTR401 Promote innovation in team environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to identify and implement ways of promoting innovation within team environments in the workplace.

The unit applies to individuals who are team participants or team leaders responsible for playing a proactive role in demonstrating innovation in a formal or informal team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify opportunities to maximise innovation	1.1 Identify team requirements relating innovation 1.2 Determine team dynamic and own relationship with team 1.3 Assist in evaluating team requirements according to workplace policies and procedures 1.4 Assist in identifying team's current ways of working according to team objectives 1.5 Assist in identifying opportunities in areas for innovation 1.6 Assist in creating processes that allow team members to suggest options for innovation and innovative ideas
2. Organise and agree on effective ways of	2.1 Identify ideas for ways of working better

ELEMENT	PERFORMANCE CRITERIA
working	2.2 Delegate responsibilities across the team, and encourage and reinforce team-based innovation 2.3 Agree and share responsibilities and confirm best use of team strengths and abilities 2.4 Schedule activities that allow time for thinking, challenging and collaboration 2.5 Establish reward and stimulation as an integral part of the team's way of working
3. Support and guide colleagues to promote innovation	3.1 Demonstrate behaviour that supports innovation within team 3.2 Create an environment for staff to proactively share information, knowledge and experiences with other team members 3.3 Dedicate time with team members to challenge and test ideas 3.4 Discuss and explore innovation ideas with other team members
4. Evaluate innovation ideas and promotion	4.1 Identify criteria to review successful innovation in the workplace 4.2 Share innovation successes and examples of successful innovation within own workplace 4.3 Reflect on implemented innovation ideas 4.4 Seek and respond to feedback from relevant stakeholders to generate discussion and identify improvements in promoting innovation 4.5 Discuss with relevant stakeholders the challenges of being innovative 4.6 Document feedback received for improvements in promoting innovation for future activities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Interprets and analyses textual information, from a wide range of sources, to identify information relevant to team activities
Writing	Uses clear language and formats appropriate for the audience to highlight and present specific information
Oral communication	- Actively participates in verbal exchanges of ideas and elicits the views and opinions of team members by listening and questioning - Uses clear language to clarify rules and roles relating to team

SKILL	DESCRIPTION
	activities in formal and informal situations
Numeracy	• Interprets numeric information relevant to team activities
Planning and organising	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Teamwork	• Uses inclusive techniques to initiate, contribute and promote discussion amongst potentially diverse team members • Recognises the importance of establishing and building effective working relationships
Planning and organising	• Plans, sequences and prioritises tasks for efficient and effective outcomes
Problem solving	• Uses problem-solving processes to address less predictable problems, and when appropriate, seeking input from others • Contributes to continuous improvement of current work practices by applying basic principles of analytical and lateral thinking • Reflects on outcomes and further explores own and the team's role in implementing innovation
Initiative and enterprise	• Understands the nature and purpose of own role and how it affects others in the work context

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to BSBINN301 Promote innovation in a team environment.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBSTR401 Promote innovation in team environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- on at least two occasions assist a team to create an innovative team environment.

In the course of the above, the candidate must:

- encourage others to contribute to innovation
- identify ways of working
- implement and communicate improvements
- plan and schedule activities
- reflect on activities, feedback and challenges to identify improvement options
- model open and respectful communications
- contribute to the make-up and rules of the team.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- types of innovation and their benefits
- ways of working, including:
 - working hours
 - working spaces
 - agile working
- workplace policies and procedures
- internal and external factors that contribute to a team becoming and remaining innovative, including:
 - team characteristics
 - role of group dynamics and diversity
 - broader environmental factors

- activities that can encourage and hinder innovation in a team, including:
 - allocation of time and activities
 - modelling behaviour
 - rewards and recognition
 - communications
 - feedback.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace equipment and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement continuous improvement of systems and processes of an organisation. It includes using systems and strategies to encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements.

The unit applies to managers who are responsible for implementing the continuous improvement process to achieve the objectives of the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify and plan for improvement	1.1 Identify relevant stakeholders and establish improvements required 1.2 Identify where new systems and processes could be implemented 1.3 Promote team involvement in decision making processes for team systems and processes 1.4 Communicate and agree on new improvement systems and processes with relevant stakeholders 1.5 Manage reports and recommendations for using systems and processes of the organisation

ELEMENT	PERFORMANCE CRITERIA
	1.6 Establish risk review processes
2. Monitor implementation of continuous improvement	2.1 Use workplace systems and technology, and monitor team performance according to organisational policies and procedures 2.2 Implement new systems and processes in consultation with relevant stakeholders 2.3 Maintain new system and processes in consultation with relevant stakeholders 2.4 Identify and resolve system and process issues
3. Evaluate implementation of continuous improvement	3.1 Communicate productivity improvements to relevant stakeholders and confirm their understanding 3.2 Seek and respond to feedback from relevant stakeholders on proposed improvement systems and process 3.3 Review improvement systems and process, and make changes, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Evaluates and integrates facts and ideas to construct meaning from a range of text types in order to implement continuous improvement systems and processes
Writing	- Selects vocabulary, grammatical structures and conventions appropriate to text - Researches, plans and prepares continuous improvement documentation for required stakeholders
Oral communication	Participates in a variety of spoken exchanges with a range of audiences using structure and language to suit the audience
Initiative and enterprise	- Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment - Recognises the potential of new approaches to enhance work practices and outcomes - Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information and identifying and evaluating options against agreed criteria

SKILL	DESCRIPTION
Teamwork	• Selects and uses required conventions and protocols when communicating with diverse individuals to seek and share information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group communication, influencing direction and taking a leadership role on occasion
Self-management	• Evaluates effectiveness of decisions in terms of how well they meet stated goals
Technology	• Uses digital applications to access and filter data, extract, organise, integrate and share required information
Planning and organising	• Takes responsibility for planning and organising own workload to achieve required outcomes

Unit Mapping Information

Supersedes and is equivalent to BSBMGT403 Implement continuous improvement.

Supersedes but is not equivalent to:

- BSBCON401 Work effectively in a business continuity context
- BSBMGT406 Plan and monitor continuous improvement.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement at least one continuous improvement system or process in an organisation or work area.

In the course of the above, the candidate must:

- provide support to enable individuals and teams to participate in decisions, take responsibility, show initiative and implement improvement processes
- communicate effectively to support the implementation of improvements and improvement system and processes
- implement, monitor and update improvement plans, processes and procedures to improve performance
- document performance to identify further opportunities for improvement
- manage records and reports in the systems and procedures of the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- continuous improvement systems and processes
- coaching and mentoring needs to support continuous improvement
- change management techniques that support continuous improvement and initiative
- organisation's systems and data used for benchmarking and monitoring performance for continuous improvement.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

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BSBSTR501 Establish innovative work environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to create an environment that enables and supports practice which focuses on a holistic approach to the integration of innovation across all areas of work practice.

The unit applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self-formed team of individuals.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Establish work practices	1.1 Identify relevant stakeholders 1.2 Identify organisational objectives and practices 1.3 Evaluate current work conditions 1.4 Determine working conditions that allow innovative practices according to organisational policies and procedures 1.5 Identify organisational resources relating to innovation 1.6 Build and lead team and maximise opportunities for innovation
2. Create an innovative	2.1 Evaluate the impacts of changing work environment

ELEMENT	PERFORMANCE CRITERIA
environment	2.2 Collaborate with stakeholders and develop ideas for enhancing work environment 2.3 Identify and select resources required for enhancing work environment 2.4 Assess the ability of the workspace to support innovation 2.5 Assist team members to adapt and perform in new work environment
3. Implement innovative work environment	3.1 Encourage creative mindsets, collaborative working and development of positive workplace relationships 3.2 Reinforce the value of innovation according to organisational vision and objectives 3.3 Take risks to open up opportunities for innovation 3.4 Select ways of celebrating and encouraging innovation 3.5 Encourage and support evaluation of innovative ideas
4. Share and evaluate innovative ideas and work environment	4.1 Share relevant information, knowledge and skills on innovative practices with stakeholders 4.2 Provide and encourage formal and informal learning opportunities to develop skills required for innovation 4.3 Create opportunities where individuals can learn from the experience of others 4.4 Seek and respond to suggestions, improvements and innovations from all team members

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Interprets and evaluates information that may deal with complex ideas related to issues both within and outside a given workplace context
Writing	Develops information for others using language to suit the context and audience
Oral communication	- Presents ideas and concepts to a range of audiences using structure and language to suit the audience - Uses active listening and questioning to discuss and clarify information and to confirm understanding
Self-management	Takes responsibility for implementing practices and procedures to achieve organisational objectives in innovation according to role

SKILL	DESCRIPTION
	- requirements • Accepts responsibility for planning and implementing tasks and practices to achieve organisational goals, negotiating key aspects with others and taking into account current capabilities and needs
Initiative and enterprise	• Develops new and innovative ideas through exploration, evaluation, analysis and critical thinking
Teamwork	• Uses required communication techniques to build rapport and foster strong relationships with co-workers in a range of work contexts • Uses inclusive and collaborative techniques to share, promote and convey complex information about new ideas and systems within the workplace • Facilitates a climate where people feel comfortable suggesting and discussing improvements and new ideas
Problem Solving	• Uses problem solving processes to identify, assess and respond to challenges and risks around innovation

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBINN501 Establish systems that support innovation
- BSBINN502 Build and sustain an innovative work environment.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBSTR501 Establish innovative work environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- establish at least two different procedures and practices that foster innovation in areas of work practice, including at least three of the following:
 - collaborative work arrangements
 - building team capacity to contribute to innovation
 - providing formal and informal learning opportunities
 - evaluating ideas of innovation in work environment
 - celebrating and encouraging innovation
 - consulting with relevant stakeholders
 - changing physical work environment, including designing, fitting-out and decorating workspaces
 - communicating and sharing of ideas and feedback.

In the course of the above, the candidate must:

- reinforce the value of innovation to the vision and objectives of the organisation
- model behaviour, including:
 - being receptive to ideas
 - giving constructive advice
 - establishing and maintaining relationships based on mutual respect and trust
 - taking considered risks that provide opportunities for innovation
- support innovation and collaboration of ideas to make improvements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- concepts and theories of innovation

- context for innovation in the workplace, including:
 - core business values
 - overall objectives
 - broader environmental context
 - value and benefit of innovative ideas and projects
- factors and tools that motivate individuals
- creative thinking and innovative work practices
- ways of celebrating and promoting innovation in the workplace
- approaches to management and leadership and how they support and hinder innovation
- challenges and barriers to innovation and ways of overcoming them, including:
 - rewarding and celebrating innovation
 - coaching and learning
 - modelling behaviour and managing the physical environment.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- relevant legislation and codes of practice
- relevant organisational policies and procedures
- workplace equipment and resources.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBSTR502 Facilitate continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to lead and manage continuous improvement systems and processes. Particular emphasis is on the development of systems and the analysis of information to monitor and adjust performance strategies, and to manage opportunities for further improvements.

The unit applies to individuals who take an active role in managing a continuous improvement process in order to achieve an organisation's objectives. At this level, work will normally be carried out using complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem-solving and decision-making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish systems and processes	1.1 Identify current systems and processes that facilitate continuous improvement 1.2 Identify and define improvement needs and opportunities for the organisation 1.3 Develop decision-making processes to assist continuous improvement and communicate to relevant stakeholders 1.4 Develop strategies for continuous improvement and encourage

ELEMENT	PERFORMANCE CRITERIA
	team members to participate in decision-making processes 1.5 Develop knowledge management systems to capture team progress, insights and experiences from business activities 1.6 Develop new systems and processes that facilitate continuous improvement according to improvement needs and opportunities 1.7 Establish processes that confirm team members are informed about continuous improvement outcomes
2. Monitor and adjust performance strategies	2.1 Confirm relevant systems and processes meet organisation sustainability requirements 2.2 Confirm team progress, insights and experiences are captured and accessible using knowledge management systems 2.3 Coach individuals and teams to implement and support continuous improvement systems and processes 2.4 Identify and evaluate ways in which planning and operations could be improved 2.5 Make recommendations and communicate strategies to relevant stakeholders
3. Manage opportunities for further improvement	3.1 Evaluate outcomes and identify opportunities for improvement 3.2 Seek feedback from relevant stakeholders on systems and processes 3.3 Identify other areas for improvement and document feedback for future planning

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	- Identifies and extracts required information from a range of complex texts - Locates, interprets and analyses workplace documentation to gather information relating to continuous improvement
Writing	- Develops complex texts related to continuous improvement processes according to organisational requirements - Ensures the vocabulary, grammatical structures and conventions are required for the context and target audience
Oral	Presents information to a range of audiences using appropriate structure and language

SKILL	DESCRIPTION
communication	• Listens and comprehends information from a variety of spoken exchanges with clients, co-workers and other stakeholders • Confirms understanding through questioning and active listening
Initiative and enterprise	• Monitors adherence to organisational policies, procedures and protocols and considers own role in terms of its contribution to broader goals of the work environment • Identifies and uses appropriate conventions and protocols when communicating with colleagues and external stakeholders
Problem solving	• Uses analytical and lateral thinking to review current practices and develop ideas for improvement
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction and influencing direction
Self-management	• Takes responsibility for developing, implementing and monitoring systems and processes to achieve organisational outcomes
Technology	• Reflects on the ways in which digital systems and tools are used, or could be used, to achieve work goals

Unit Mapping Information

Supersedes and is equivalent to BSBMGT516 Facilitate continuous improvement.

Supersedes but is not equivalent to BSBCUE501 Develop business continuity strategy.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBSTR502 Facilitate continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- lead and manage continuous improvement systems and processes for at least one organisation or work area.

In the course of the above, the candidate must:

- address organisational sustainability requirements
- incorporate mentoring, coaching and other support to enable individuals to participate in continuous improvement processes
- capture progress, insights and experiences using established knowledge management systems
- encourage participation in decision making processes and ideas for continuous improvement.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- systems and processes facilitating continuous improvement
- common decision-making processes
- organisational policies and procedures relating to digital systems, decision-making processes and continuous improvement systems
- business systems and requirements, including:
 - knowledge management
 - quality
 - sustainability
 - performance management.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to performance evidence
- organisational policies and procedures relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBTWK201 Work effectively with others

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to work cooperatively with others and deal effectively with issues, problems and conflict.

The unit applies to individuals who perform a range of routine tasks in a team environment and use a basic knowledge of teamwork in a defined context, under direct supervision or with limited individual responsibility.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Teamwork and Relationships

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Develop effective workplace relationships	1.1 Identify individual responsibilities in relation to workgroup members 1.2 Clarify individual and workgroup responsibilities with work team 1.3 Participate in informal meetings and information sharing with workgroup 1.4 Request and apply feedback from supervisor on individual practices
2. Improve workgroup processes	2.1 Support team members to meet workgroup goals 2.2 Contribute to workgroup goals and tasks according to organisational requirements

ELEMENT	PERFORMANCE CRITERIA
	2.3 Share work-related information with workgroup according to organisational policies and procedures 2.4 Plan strategies for team performance improvement with workgroup
3. Resolve issues, problems and conflict	3.1 Identify advantages of differences in values and beliefs between workgroup members 3.2 Respond to any linguistic and cultural differences in communication styles according to legislation, organisational policies and procedures and ethical standards 3.3 Identify potential workgroup issues, problems and conflicts encountered in the workplace 3.4 Seek assistance from supervisor to address problems and conflicts that arise 3.5 Suggest possible ways of dealing with identified workplace issues

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	Identifies and interprets information to determine task requirements
Writing	- Completes required documentation using organisational formats - Composes simple documents for others to read
Oral Communication	- Presents information and seeks advice using language and features appropriate to audience - Participates in discussions using listening and questioning to elicit views of others and to clarify or confirm understanding
Initiative and enterprise	Identifies responsibilities of own role and follows explicit and implicit organisational protocols and procedures
Teamwork	- Selects and uses appropriate communication practices when seeking or sharing information - Establishes and builds rapport and relationships with others to foster a culture of respect and cooperation in communications - Listens to the ideas of others and considers their needs
Planning and organising	Plans and organises work commitments to ensure deadlines and objectives are met

Unit Mapping Information

Supersedes and is equivalent to BSBWOR203 Work effectively with others.

Supersedes and is not equivalent to BSBFLM312 Contribute to team effectiveness.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBTWK201 Work effectively with others

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- work with a group to achieve an objective on at least two occasions and address at least one identified problem or conflict on each occasion.

In the course of the above, the candidate must:

- distinguish individual responsibilities from workgroup responsibilities
- demonstrate the ability to:
 - support team members
 - communicate according to the cultural and linguistic requirements of the individual
 - act on constructive feedback
 - use communication channels to share information
 - cooperate and contribute to team goals
 - identify improvement opportunities
- identify problems and conflicts and address them according to organisational and ethical policies and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational and ethical standards, policies and procedures that relate to own work role
- team responsibilities and duties and their relationship to individual responsibilities and duties
- organisational policies and procedures relating to workplace discrimination and bullying
- personal values and beliefs including their importance in the development of relationships
- communication channels used to communicate in work teams including:
 - team meetings

- one-on-one interactions with individual team members
- emails
- instant messaging
- calls
- key problems and conflicts arising in workgroup contexts
- methods of resolving team problems including referral to relevant organisational personnel
- conflict resolution techniques.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace discrimination and bullying legislation
- organisational and ethical standards, policies and procedures for working with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBTWK502 Manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to lead teams in the workplace and to actively engage with the management of the organisation.

The unit applies to individuals working at a managerial level who lead and build a positive culture within their work teams. At this level, work will normally be carried out using complex and diverse methods and procedures requiring the exercise of considerable discretion and judgement. It will also involve using a range of problem solving and decision-making strategies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Teamwork and Relationships

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish team performance plan	1.1 Identify team purpose, roles, and responsibilities according to organisational and task objectives 1.2 Develop performance plans with expected outcomes, key performance indicators (KPIs) and goals for work team 1.3 Support team members in meeting expected performance outcomes
2. Develop and facilitate team cohesion	2.1 Develop strategies for facilitating team member input into planning, decision making and operational aspects of team tasks 2.2 Develop or modify policies and procedures for promoting team

ELEMENT	PERFORMANCE CRITERIA
	member accountability for personal work and team tasks 2.3 Provide feedback to team members on team effort and contributions 2.4 Develop processes for identifying and addressing issues, concerns and problems identified by team members
3. Facilitate teamwork	3.1 Encourage team members to participate in and to take responsibility for team activities 3.2 Support the team in identifying and resolving work performance problems 3.3 Promote work team collaboration through individual behaviour
4. Liaise with stakeholders	4.1 Establish and maintain open communication processes with relevant stakeholders 4.2 Communicate information from line management to the team 4.3 Communicate and follow-up unresolved issues, concerns and problems raised by team members with line management 4.4 Address unresolved issues, concerns and problems raised by stakeholders

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	Analyses and interprets textual information from the organisation's policies, goals and objectives to establish team goals or to determine corrective action
Writing	Prepares workplace documentation that communicates complex information clearly and effectively
Oral Communication	- Engages in discussions or provides information using appropriate vocabulary and non-verbal features - Uses listening and questioning techniques to confirm understanding and to engage the audience
Enterprise and initiative	- Identifies how own role contributes to broader organisational goals - Modifies or develops policies and procedures to achieve organisational goals
Teamwork	- Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders - Uses interpersonal skills to gain trust and confidence of team and

	provides feedback to others in forms that can be understood and used • Adapts personal communication style to build positive working relationships and to show respect for the opinions, values and particular needs of others
Planning and organising	• Develops, implements and monitors plans and processes to ensure team effectiveness • Monitors and actively supports processes and development activities to ensure the team is focused on work outcomes • Plans for unexpected outcomes and implements creative responses to overcome challenges

Unit Mapping Information

Supersedes and is equivalent to BSBWOR502 Lead and manage team effectiveness.

Supersedes but is not equivalent to:

- BSBMGT520 Plan and manage the flexible workforce
- BSBWRK409 Prepare for and participate in dispute resolution.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBTWK502 Manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage the effectiveness of at least one work team.

In the course of the above, the candidate must:

- provide feedback to encourage, value and reward others
- model desired behaviour and practices
- encourage and foster shared understanding of purpose, roles and responsibilities
- support team to meet expected performance outcomes including providing formal and informal learning opportunities as needed
- develop performance plans with key performance indicators (KPIs), outputs and goals for individuals or the team which incorporate input from stakeholders
- communicate effectively with a range of stakeholders about team performance plans and team performance
- evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- impacts of group dynamics on team performance
- methods of establishing team activities including communication processes
- strategies that can support team cohesion, participation and performance
- strategies for gaining consensus
- issue resolution strategies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documents relevant to team task objectives.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

BSBWHS521 Ensure a safe workplace for a work area

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to establish, maintain and evaluate an organisation's work health and safety (WHS) policies, procedures and programs in a work area to ensure a safe workplace, according to WHS legislative requirements. It takes a systems approach and addresses compliance with relevant legislative requirements.

The unit applies to those working in a range of contexts who have, or are likely to have, responsibility for WHS as part of their broader management role. It is relevant for people with obligations under WHS laws, for example persons conducting a business or undertaking (PCBUs) or officers, as defined by WHS laws.

NOTES

1. The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent, and generally either can be used in the workplace. In jurisdictions where *model WHS laws* have not been implemented, registered training organisations (RTOs) are advised to contextualise this unit of competency by referring to existing WHS legislative requirements.

2. The *model WHS laws* include the model WHS Act, model WHS Regulations and model WHS Codes of Practice. See Safe Work Australia for further information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA

ELEMENTS	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish a WHS management system in a work area	1.1 Locate, adapt, adopt and communicate WHS policies that define the organisation's commitment to complying with WHS laws 1.2 Identify duty holders and define WHS responsibilities for all workplace personnel in the work area according to WHS laws, policies, procedures and programs 1.3 Identify and approve financial and human resources required by the WHS management system (WHSMS) according to organisational procedures
2. Establish and maintain effective and compliant consultative arrangements for managing WHS in a work area	2.1 Work with required personnel to set up and maintain consultative arrangements according to required WHS laws 2.2 Resolve issues raised through participation and consultation arrangements according to required WHS laws and organisational protocols 2.3 Provide information about consultation and participation outcomes to required personnel according to organisational policies and procedures
3. Establish and maintain procedures for effectively identifying hazards, and assessing and controlling risks in work area	3.1 Develop procedures for ongoing hazard identification, and assessment and control of associated risks 3.2 Include hazard identification at the planning, design and evaluation stages of any workplace change to ensure that new hazards are not created by proposed changes and existing hazards are controlled 3.3 Develop and maintain procedures for selecting and implementing risk controls according to the hierarchy of control measures and WHS legislative requirements 3.4 Identify inadequacies in existing risk controls according to the hierarchy of control measures and WHS legislative requirements, and promptly provide resources to enable implementation of new measures 3.5 Identify requirements for expert WHS advice, and request this advice as required, according to organisational procedures
4. Evaluate and maintain a work area WHS management system	4.1 Develop and provide a WHS induction and training program for required personnel in a work area as part of

ELEMENTS	PERFORMANCE CRITERIA
(WHSMS)	organisation's training program 4.2 Use a system for WHS recordkeeping to allow identification of patterns of occupational injury and disease in the organisation, and to maintain a record of WHS decisions made, including reasons for decisions 4.3 Measure and evaluate the WHSMS according to organisation's quality systems framework 4.4 Develop and implement improvements to WHSMS to achieve organisational WHS objectives according to organisational procedures 4.5 Ensure compliance with WHS legislative framework to achieve, as a minimum, WHS legal requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	Organises, evaluates and critiques ideas and information from WHS laws, policies, procedures and programs
Writing	- Produces WHS policies, procedures and programs using appropriate vocabulary, grammatical structure and conventions - Records WHS decisions according to organisational requirements
Oral communication	- Presents and seeks information from others using structure and language suitable for the audience - Provides information about WHS policies and procedures and on resolution of WHS issues, varying the level of technical vocabulary to suit the audience
Numeracy	Selects from, and applies, an expanding range of mathematical and problem-solving strategies in identifying financial and human resources required to support WHS requirements
Navigate the world of work	- Monitors adherence to legal and regulatory rights and responsibilities for self and others in relation to WHS - Develops, implements and reviews WHS-related policies, procedures and processes according to legislative and organisational requirements
Interact with others	Plays a lead role in situations requiring effective collaboration, demonstrating the ability to guide discussions and negotiate

Skill	Description
	agreeable outcomes • Provides feedback to others in forms they can understand and use
Get the work done	• Develops plans or processes to manage relatively complex WHS management tasks, with an awareness of how they contribute to operational and strategic goals • Uses systematic and analytical processes, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Considers whether, and how, others should be involved, using consultative or collaborative processes as an integral part of the decision-making process • Uses digital systems and tools to enter, store and retrieve relevant information

Unit Mapping Information

Supersedes and is equivalent to BSBWHS501 Ensure a safe workplace.

Links

Companion Volume Implementation Guides are available from VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

Assessment Requirements for BSBWHS521 Ensure a safe workplace for a work area

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- establish, implement, maintain and evaluate one work health and safety management system (WHSMS) for a work area of an organisation that complies with WHS laws, and organisational policies and procedures.

During the above, the candidate must:

- establish, implement, maintain and evaluate effective and compliant consultative arrangements for managing WHS, including:
 - identifying duty holders
 - identifying and approving required resources
 - developing and implementing a training program
- establish, implement, maintain and evaluate procedures for effectively identifying hazards, and assessing and controlling risks using the hierarchy of control measures.
-

Knowledge Evidence

The candidate must demonstrate the knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- details of relevant WHS laws relating to ensuring a safe workplace
- WHS organisational policies, procedures, programs and practices required for the performance evidence
- hazard identification and risk-management processes
- key principles, uses and components of the hierarchy of control measures and procedures for applying it in the workplace
- organisational and WHS legislative reporting requirements.
-

Assessment Conditions

Assessment must comply with WHS laws, legal responsibilities and duty of care required for this unit. It must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities undertaken by individuals carrying out WHS duties in the workplace, and must include access to:

- organisational WHS policies and procedures required to demonstrate the performance evidence
- WHS laws required to demonstrate the performance evidence
- case studies and, where possible, real situations
- opportunities for interaction with others.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10>

CPCCCM2007 Use explosive power tools

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Knowledge Evidence - removal of outdated references.
Changes to Performance Evidence.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 4.0.
Supersedes and equivalent to CPCCCM2007B Use explosive power tools. The unit of competency was updated to the Standards for Training Packages 2012.

Application

This unit of competency specifies the skills and knowledge required to safely and effectively operate explosive power tools (EPTs) using explosive charges in a magazine to fasten materials or fix fasteners to bases.

The unit supports the application of knowledge to safely and effectively use a range of indirect action explosive powered fastening tools used in the construction industry.

It applies to workers who work with EPTs in the construction industry. It involves working under supervision in a team environment.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry.

Unit Sector

Construction

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1. Plan and prepare to set up, operate and maintain indirect action EPTs.	1.1 Review and clarify task to set up, operate and maintain indirect action EPTs. 1.2 Review work health and safety (WHS) requirements for the task in accordance with safety plans and policies. 1.3 Identify safety signage and barricade requirements. 1.4 Review environmental requirements for the task in accordance with environmental plans and legislative requirements. 1.5 Calculate material quantity requirements. 1.6 Check EPTs for operation in accordance with manufacturers' specifications and safety requirements for use of EPT.
2. Set out fasteners.	2.1 Erect identified safety signage and barricades, and fit personal protective equipment (PPE). 2.2 Select fastener in accordance with requirements of the job. 2.3 Set-out fasteners adhering to minimum distances for set out from edge of substrate material in accordance with requirements. 2.4 Position material, check it is level, and temporarily fix or clamp into designed position in accordance with detailed drawings.
3. Operate EPTs.	3.1 Select charge in accordance with the requirements for material, base and penetration. 3.2 Install any attachments and accessories to EPT in accordance with manufacturers' specifications and WHS requirements. 3.3 Load fastener and charge into EPT in accordance with manufacturers' specification. 3.4 Carry out EPT operation and fix fastener into place in accordance with manufacturers' specifications and legislative requirements. 3.5 Check depth of fastening penetration and adjust power regulating device in accordance with conditions. 3.6 Carry out misfire procedures in accordance with manufacturers' specifications and legislative requirements. 3.7 Remove temporary holdings and fixings without damage to material.
4. Maintain EPTs and kit.	4.1 Check safety features of tools for serviceability in accordance with manufacturers' specifications. 4.2 Clean and lubricate tools in accordance with manufacturers'

	specifications. 4.3 Carry out periodic maintenance service in accordance with manufacturers' specifications. 4.4 Replenish diminished stocks of charges and fasteners to designed effectiveness of EPT kit. 4.5 Check and complete logbook and record maintenance in accordance with manufacturers' specifications.
5. Secure and store EPT equipment and charges.	5.1 Store used charges in designated container in accordance with requirements. 5.2 Store unused fasteners, the EPT and attachments in a carry case in line with manufacturers' specifications.
6. Clean up after operating EPTs.	6.1 Clear work area and dispose of, re-use or recycle materials in accordance with legislation, regulations, codes of practice and task requirements. 6.2 Clean, check, maintain and store tools and equipment in accordance with manufacturers' specifications and workplace requirements.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

- reading skills to:
 - interpret legislative requirements including those of Australian Standards and the National Construction Code (NCC)
- numeracy skills to:
 - apply measurements and calculations to fastener set-out
- oral communication skills to:
 - use questioning to identify and confirm requirements
 - discuss cause of problems
 - report work site hazards, including faults in tools, equipment and materials.

Unit Mapping Information

Supersedes and is equivalent to CPCCCM2007B Use explosive power tools.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCCM2007 Use explosive power tools

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Knowledge Evidence - removal of outdated references.
Changes to the Performance Evidence.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 4.0.
Supersedes and equivalent to CPCCCM2007B Use explosive power tools. The unit of competency was updated to the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a person must use explosive power tools (EPTs) to fix metal and timber to one steel base and one concrete base.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- jurisdictional legislation and regulations relating to setting up, operating and maintaining indirect action EPTs including those for work health and safety (WHS), and protection of the environment, including:
 - job safety analyses (JSAs)
 - safe work method statements (SWMSs)
 - safety data sheets (SDSs)
 - safety manuals and instructions for plant, tools and equipment
 - signage and barricades
 - personal protective equipment (PPE)
 - environmental and work site safety plans
- functions, operations and limitations of EPTs
- EPT materials
- EPT charges and fasteners
- EPT attachments, including channel, rebate and other manufacturer attachments

- EPT, fastener and charge manufacturers' specifications
- processes for interpreting drawings and using information for:
 - setting-out fasteners, including:
 - regulated minimum distances
 - bases, including concrete, masonry or steel
 - positioning material
- processes for:
 - using EPTs, including:
 - stripping and assembling tools
 - completing log of serviceability
 - maintaining and cleaning tools
 - selecting charges and fasteners applicable to the base material and material being fixed
 - misfire procedures
 - using attachments
 - complying with storage and security regulations and work health and safety (WHS) requirements for the working environment
 - selecting signage
 - test fire
 - maintaining EPTs and kits
 - securing and storing EPT equipment and charges
- materials storage and environmentally friendly waste management
- processes for the calculation of material requirements
- security and storage procedures for equipment and charges
- workplace and equipment safety requirements.

Assessment Conditions

Assessors must satisfy the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment of performance must be undertaken in the workplace or in a simulated workplace environment. Tasks are to be performed to the level of proficiency and within the time limits expected in a workplace.

Assessors are responsible for ensuring that the person demonstrating competency has access to:

- industry-standard indirect action EPTs, attachments, fasteners and charges
- specifications for tasks requiring use of EPTs
- appropriate documents, materials, tools equipment and PPE currently used in industry
- requirements of appropriate sections of legislation and regulations
- relevant workplace policies and procedures.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLDG3001 Licence to perform dogging

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging.
Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform dogging work. Dogging consists of the application of slinging techniques to move a load, including the selection and inspection of lifting gear, and the directing of a plant operator in the movement of a load when the load is out of sight of the operator.

Dogging work is conducted in the construction industry and other industries where loads are lifted and moved using cranes or hoists.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

Nil.

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the Performance criteria describe what needs to be done to

essential outcomes.	demonstrate achievement of the element.
1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information. 1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements. 1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements. 1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment. 1.5 Calculate load weight, dimensions and centre of gravity. 1.6 Determine lifting and slinging points. 1.7 Calculate derated working load limit (WLL) of lifting equipment resulting from selected slinging techniques. 1.8 Establish required communication methods with plant operator.
2 Select and inspect equipment.	2.1 Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose. 2.2 Select and check PPE. 2.3 Select lifting equipment and gear, inspect for defects, and isolate, tag out, report and record defective items. 2.4 Select communication equipment and check that it is working and fit for use.
3 Set up task.	3.1 Establish and maintain communication with relevant persons to ensure lift plan and risk controls are communicated clearly, including any impact on other

- workplace activities.
- 3.2 Ensure risk controls and safety measures and equipment have been put in place.
 - 3.3 Prepare lifting equipment and gear for safe use.
 - 3.4 Consult with relevant persons to ensure that the load destination is stable, able to bear the load and prepared for safe access and landing.
 - 3.5 Attach and secure lifting equipment and gear to the plant-designated lifting point.
- 4 Perform task.
- 4.1 Direct plant designated lifting point/hook, over the load's centre of gravity.
 - 4.2 Attach and secure lifting equipment and gear to the load using slinging techniques.
 - 4.3 Attach and secure tag line as required to guide the load.
 - 4.4 Use signals and radio communication methods to direct the load movement, both in and out of sight of the plant operator.
 - 4.5 Conduct test lift to check the security of the slings and the stability of the load, lifting equipment and gear.
 - 4.6 Direct the movement of the load in accordance with lift plan, including lowering and landing.
 - 4.7 Disconnect lifting gear from the load and direct the positioning of crane or hoist for next task.
- 5 Pack up and clean up.
- 5.1 Remove excess materials from work area.
 - 5.2 Inspect lifting equipment and gear for defects, and isolate, label and report defective items.
 - 5.3 Store lifting equipment and gear in accordance with workplace requirements.
 - 5.4 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLDG3001 Licence to perform dogging

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging.
Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by slinging and directing the movement of at least five loads of differing shapes, sizes and weights.

The loads must be moved by a slewing mobile crane of a maximum rated capacity of at least seven tonnes.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs), and equipment service and maintenance records and checklists
- perform all activities in compliance with safe work practices and workplace-specific procedures and policies, and check, use, maintain and store equipment in compliance with manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- determine load weight and travel path in consultation with crane operator
- select and inspect appropriate lifting gear and apply slinging techniques appropriate to the type of load, its mass and centre of gravity
- identify the working load limit (WLL) tags of the lifting equipment and gear and calculate the deration of the WLL resulting from the slinging techniques applied
- make temporary connections to loads using fibre or synthetic ropes
- use radio communication and hand and whistle signals to guide the crane operator, including when the load is out of sight of the crane operator.

The candidate must use the following bends and hitches when slinging and directing the movement of loads:

- single sheet bend
- clove hitch

- rolling hitch
- bowline.

Load types must include:

- stillage containing at least ten scaffolding standards or loose steel pipes of 200 kg or more
- ten loose steel pipes, of at least 2 m length, that need wrapping
- an uneven load of at least two tonnes requiring slinging
- steel plate of at least 1.5 m x 2 m x 25 mm
- a round load with a minimum diameter of 300 mm and minimum length of 3 m.

The candidate must direct each load through at least 180 degrees of the crane's slewing radius.

Each of the following must be used at least once:

- flexible steel wire rope (FSWR) sling
- synthetic sling
- chain sling (including shortener)
- spreader bar or lifting beam
- tag line
- shackles
- eyebolts
- plate clamps.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for dogging under Commonwealth and state or territory work health and safety (WHS) legislation, standards and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in dogging:

- instability of landing surfaces
- overhead and underground hazards
- insufficient lighting
- traffic
- weather
- pedestrian traffic
- work at heights
- risk controls and equipment:
 - traffic management plan
 - traffic barricades and control
 - exclusion zones
 - pedestrian barricades
 - PPE
 - lights
 - fall prevention and fall arrest equipment
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight and skin and sun protection
- hand, whistle and two-way radio communication, including signals for:
 - stop
 - hoist up and down
 - luff boom up and down
 - telescope in and out
 - slew left and right
- selection, inspection, care, handling, application, limitations and storage of dogging equipment and gear:
 - (FSWR sling
 - synthetic sling
 - chain sling (including shortener)
 - spreader bar or lifting beam
 - tag line
 - shackles
 - eyebolts
 - plate clamps
- slinging techniques
- load destination stability, load capacity and safe access for walking and unpacking the load:

- ground
- loading platforms
- suspended floors
- vehicles
- mathematical processes for calculating deration of WLL of lifting equipment and gear due to slinging techniques
- methods of making temporary connections to loads using fibre and synthetic ropes:
 - single sheet bend
 - clove hitch
 - rolling hitch
 - bowline.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction governing the licence are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.

Candidates must have access to:

- a slewing mobile crane of at least seven tonnes maximum rated capacity, and lifting equipment and gear in a safe and compliant condition
- loads and equipment required to perform the tasks specified in the Performance Evidence
- a licensed crane operator to undertake lifting activity
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - incident reports
 - workplace procedures, including emergency plan
 - equipment manuals and manufacturer specifications.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLHS3001 Licence to operate a personnel and materials hoist

Modification History

- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCCLHS3001A Licence to operate a personnel and materials hoist. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely operate a personnel and materials hoist, that is, a cantilever or tower hoist or several winches configured to operate as a hoist intended to carry goods, materials or people.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

Nil.

Unit Sector

Licensing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.

1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.

- 1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
 - 1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
 - 1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment.
 - 1.5 Calculate load weight, check that it is within the working load limit (WLL) of the hoist and distribute it in accordance with manufacturer requirements.
 - 1.6 Establish required communication methods with relevant persons.
 - 1.7 Review emergency procedures in consultation with relevant persons.
- 2 Select and prepare equipment.
 - 2.1 Put risk controls and safety measures and equipment in place in consultation with relevant persons.
 - 2.2 Access hoist safely.
 - 2.3 Visually check hoist for damage and defects.
 - 2.4 Carry out pre-start checks, including checking the hoist logbook and controls.
 - 2.5 Carry out operational checks, including testing hoist safety devices and checking for fire extinguisher and other emergency equipment.
 - 2.6 Ensure hoist is operating correctly and is free of obstructions.
 - 2.7 Check communication equipment, lighting and alarm systems to make sure they are working and fit for use.
 - 2.8 Conduct test run of hoist, check for abnormal noises and shut down, tag and report identified abnormalities as required.

	2.9	Isolate, report, tag out and record defective equipment.
3	Conduct hoist operations.	
	3.1	Maintain communication with relevant persons during hoist operations and emergency situations.
	3.2	Operate loaded hoist in accordance with manufacturer requirements.
	3.3	Use and interpret communication signals.
	3.4	Conduct emergency lowering in accordance with manufacturer requirements.
4	Shut down and secure hoist.	
	4.1	Shut down hoist in accordance with manufacturer requirements.
	4.2	Carry out shut-down checks.
	4.3	Isolate and secure power against unauthorised access.
	4.4	Report, tag out, isolate and record damages and defects.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLHS3001A Licence to operate a personnel and materials hoist.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLHS3001 Licence to operate a personnel and materials hoist

Modification History

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLHS3001A Licence to operate a personnel and materials hoist. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by operating a personnel and materials hoist, and conducting three lifts carrying loads of different weights. The hoist must be stopped at three different levels, including at least one floor.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs), and equipment service and maintenance records and checklists
- perform all activities in compliance with safe work practices and workplace-specific procedures and policies
- check, use, maintain and store equipment in compliance with manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- calculate load weights and confirm that they are within the capacity of the hoist
- check and use safety devices
- move load
- implement shut-down procedures.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for operating a personnel and materials hoist crane under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - safety data sheets (SDSs)
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records

- manufacturer specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in hoist operations:
 - ground instability
 - obstructions
 - impact of other tasks being performed in the workplace
 - other plant
 - hoist overload
 - hazardous chemicals and dangerous goods
 - electrical hazards
 - insufficient lighting
 - hazardous manual tasks
 - damaged or poor-quality equipment
 - pedestrian traffic
 - wind and other adverse weather conditions
 - falling objects
 - falls from heights
- risk controls and equipment:
 - firefighting equipment
 - safety tags on electrical switches and isolators
 - traffic barricades and controls
 - pedestrian barricades and controls
 - hoist safety devices, including:
 - hoist safety gates and guards
 - hoist safety interlocks
 - adequate illumination
- testing and tagging requirements and electrical hazards associated with power supply for hoists
- processes to prevent interference to and from radio equipment being used near a personnel and materials hoist
- PPE:
 - hard hat
 - safety boots

- gloves
- high-visibility clothing
- breathing, hearing, sight, skin and sun protection
- relevant persons:
 - other hoist operators
 - riggers
 - maintenance personnel
 - supervisors
- communication equipment:
 - two-way radios
 - intercoms
 - bells
 - lights
- pre-start operational checks to ensure:
 - safe access and egress, including ground conditions
 - security and safe distance between tower ties
 - earth leakage protection of power supply
 - power leads are secured above ground level and not attached to scaffolds or building structure
 - tower guides are clean and free of rust and damage
 - signage is clearly displayed and legible
 - brakes and drive mechanism are in good working order
 - overhead protection
 - intercom and signalling systems are in good working order
 - barriers, fencing and gates are in place
 - lubrication has been applied where required
 - hoist rope, where used, is safe
 - sheaves and anchorage points are accessible
 - obstructions have been removed
 - loose gear and equipment have been removed
- processes for determining the weight of the load from labels, markings and load paperwork
- processes for identifying and interpreting the working load limit (WLL) of hoists
- routine problems encountered in the operation of a hoist, and inspection techniques and adjustments required for correction
- processes for responding to unplanned and unsafe situations, including equipment failure or loss of control and adverse weather conditions
- emergency and evacuation procedures, including fire procedures
- shut-down procedures:
 - position platform at designated parking level
 - isolate power from control panel

- isolate and secure mains power supply
- remove key from control panel
- secure landing gates to prevent unauthorised access
- secure fencing and barriers around base to prevent unauthorised access
- hoist characteristics, capabilities and operation to suit loads of different shapes, sizes and weights.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- a personnel and materials hoist capable of carrying loads of different weights and able to be stopped at three different levels, including at least one floor
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - incident reports
 - workplace procedures, including SWMSs, SDSs and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLHS3002 Licence to operate a materials hoist

Modification History

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLHS3002A Licence to operate a materials hoist. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely operate a materials hoist, that is, a hoist consisting of a car, bucket or platform cantilevered from and travelling up and down the external face of the support of a structure, which is used for hoisting goods and materials but not persons.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

Nil.

Unit Sector

Licensing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.

1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.

1.2 Obtain and interpret information, including safe work

- method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
- 1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
 - 1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment.
 - 1.5 Calculate load weight, check that it is within the working load limit (WLL) of the hoist and distribute it in accordance with manufacturer requirements.
 - 1.6 Establish required communication methods with relevant persons.
 - 1.7 Review emergency procedures in consultation with relevant persons.
- 2 Select and prepare equipment.
- 2.1 Put risk controls and safety measures and equipment in place in consultation with relevant persons.
 - 2.2 Access hoist safely.
 - 2.3 Visually check hoist for damage and defects.
 - 2.4 Carry out pre-start checks, including checking the hoist logbook and controls.
 - 2.5 Carry out operational checks, including testing hoist safety devices and checking for fire extinguisher and other emergency equipment.
 - 2.6 Ensure hoist is operating correctly and is free of obstructions.
 - 2.7 Check communication equipment, lighting and alarm systems to make sure they are working and fit for use.
 - 2.8 Conduct test run of hoist, check for abnormal noises and shut down, tag and report identified abnormalities as required.
 - 2.9 Isolate, report, tag out and record defective equipment.

3 Conduct hoist operations.	3.1 Maintain communication with relevant persons during hoist operations and emergency situations.
	3.2 Operate loaded hoist in accordance with manufacturer requirements.
	3.3 Use and interpret communication signals.
	3.4 Conduct emergency lowering in accordance with manufacturer requirements.
4 Shut down and secure hoist.	4.1 Shut down hoist in accordance with manufacturer requirements.
	4.2 Carry out shut-down checks.
	4.3 Isolate and secure power against unauthorised access.
	4.4 Report, tag out, isolate and record damages and defects.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLHS3002A Licence to operate a materials hoist.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLHS3002 Licence to operate a materials hoist

Modification History

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLHS3002A Licence to operate a materials hoist. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by operating a materials hoist and conducting three lifts carrying loads of different weights. The hoist must be stopped at three different levels, including at least one floor.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with safe work practices and workplace-specific procedures and policies
- check, use, maintain and store equipment in compliance with manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- calculate load weights and confirm that they are within the capacity of the hoist
- check and use safety devices
- move load
- implement shut-down procedures.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for operating a materials hoist crane under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - safety data sheets (SDSs)
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records

- manufacturer specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in hoist operations:
 - ground instability
 - obstructions
 - impact of other tasks being performed in the workplace
 - other plant
 - hoist overload
 - hazardous chemicals and dangerous goods
 - electrical hazards
 - insufficient lighting
 - hazardous manual tasks
 - damaged or poor-quality equipment
 - pedestrian traffic
 - wind and other adverse weather conditions
 - falling objects
 - falls from heights
- risk controls and equipment:
 - firefighting equipment
 - safety tags on electrical switches and isolators
 - traffic barricades and controls
 - pedestrian barricades and controls
 - hoist safety devices:
 - hoist safety gates and guards
 - hoist safety interlocks
 - adequate illumination
- testing and tagging requirements, and electrical hazards associated with power supply for hoists
- processes to prevent interference to and from radio equipment being used near a materials hoist
- PPE:
 - hard hat
 - safety boots

- gloves
- high-visibility clothing
- breathing, hearing, sight, skin and sun protection
- relevant persons:
 - other hoist operators
 - riggers
 - maintenance personnel
 - supervisors
- communication equipment:
 - two-way radios
 - intercoms
 - bells
 - lights
- pre-start operational checks to ensure:
 - safe access and egress, including ground conditions
 - security and safe distance between tower ties
 - earth leakage protection of power supply
 - power leads are secured above ground level and not attached to scaffolds or building structure
 - tower guides are clean and free of rust and damage
 - signage is clearly displayed and legible
 - brakes and drive mechanism are in good working order
 - overhead protection
 - intercom and signalling systems are in good working order
 - barriers, fencing and gates are in place
 - lubrication has been applied where required
 - hoist rope, where used, is safe
 - sheaves and anchorage points are accessible
 - obstructions have been removed
 - loose gear and equipment have been removed
- processes for determining the weight of the load from labels, markings and load paperwork
- processes for identifying and interpreting the working load limit (WLL) of hoists
- routine problems encountered in the operation of a hoist, and inspection techniques and adjustments required for correction
- processes for responding to unplanned and unsafe situations, including equipment failure or loss of control and adverse weather conditions
- emergency and evacuation procedures, including fire procedures
- shut-down procedures:
 - position platform at designated parking level
 - isolate power from control panel

- isolate and secure mains power supply
- remove key from control panel
- secure landing gates to prevent unauthorised access
- secure fencing and barriers around base to prevent unauthorised access
- hoist characteristics, capabilities and operation to suit loads of different shapes, sizes and weights.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.

Candidates must have access to:

- a materials hoist capable of carrying loads of different weights and able to be stopped at three different levels, including at least one floor
- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - incident reports
 - workplace procedures, including SWMSs, SDS and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLRG3001 Licence to perform rigging basic level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform basic rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a structure. Riggers ensure the stability of those members and set up and dismantle hoists.

This unit applies to rigging work involving:

- structural steel erection
- hoists
- pre-cast concrete members of a structure
- safety nets and static lines
- mast climbing work platforms
- perimeter safety screens and shutters
- cantilevered crane loading platforms.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 *Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit CPCCLDG3001 *Licence to perform dogging* or holding a valid licence for dogging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.

	1.8	Establish required communication methods with relevant persons.
2	Select and inspect equipment.	
	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
	2.2	Select and check PPE.
	2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.
	2.4	Select communication equipment and check that it is working and fit for use.
3	Set up task.	
	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
	3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
	3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
	3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.
4	Undertake basic rigging activities.	
	4.1	Erect and dismantle all structures and plant while maintaining stability, in accordance with workplace and manufacturer requirements.
	4.2	Erect structural steel.
	4.3	Erect pre-cast concrete members of a structure, or lift and install a series of scenery panels.
	4.4	Erect and dismantle a safety net and static line.
	4.5	Erect and dismantle a hoist or mast climbing work

- platform.
- 4.6 Install and dismantle a perimeter safety screen or shutter.
 - 4.7 Install and dismantle a cantilevered crane loading platform.
- 5 Complete task.
- 5.1 Remove excess materials from work area.
 - 5.2 Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
 - 5.3 Store plant, equipment and gear in accordance with workplace requirements.
 - 5.4 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLRG3001 Licence to perform rigging basic level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by safely performing rigging tasks at a basic level, including:

- erecting and dismantling a portal frame of structural steel consisting of columns (150 UC 29.8 kg/m), beams (minimum 200 UB 29.8 kg/m) and braces in accordance with engineering detail. It must include:
 - appropriate structural bolts, nuts, washers, purlins and girts
 - beams installed at a height of at least 4 m
 - suitable access and working platform (e.g. elevated work platform, mobile scaffold, scissor lift, portable industrial grade ladder)

It must be packed and plumbed and include temporary bracing during erection and dismantling. Hand tools and working at height safety equipment, including harness, lanyard and inertia reel, must be used

- installing and removing a series of three retaining wall panels, each panel being not less than 4 m high by 2 m wide and not less than 1.5 tonnes. One panel must be set at a 90-degree angle to one of the other panels - candidates must identify any defective lifting equipment
- installing and removing a safety (catch) net with minimum dimensions of 3 m x 4 m in accordance with manufacturer specification and engineering detail on portal frame - candidates must identify any defective nets
- installing, using and removing a static line at least 2.1 m above the beams on portal frame, in accordance with manufacturer specifications and engineering detail – candidates must identify any defective static lines and associated equipment
- installing and removing a cantilevered materials hoist (1 or 2 barrow) or a mast climbing work platform of at least three mast sections and tied in accordance with specifications

- installing and dismantling a perimeter safety screen or shutter of at least 4 m x 2 m in accordance with manufacturer specifications and engineering detail
- installing and dismantling a cantilevered crane loading platform at a height of at least 4 m with secure gates and handrails in accordance with manufacturer specifications and engineering detail
- setting up and operating a powered winch to move a load of at least 1 tonne
- using the following splice and hitch techniques:
 - eye splice
 - becket hitch.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements
- use the following associated gear:
 - beam clamps or pipe clamps or plate clamps
 - tag lines
 - flexible steel wire rope (FSWR)
 - chains
 - wire and synthetic slings
 - shackles
 - wedge sockets
 - eye bolts
 - rope grips
 - turnbuckles
 - chain blocks
 - sheave blocks
 - spreader bars or lifting beam
 - levers/podgers
 - skates/rollers
 - wedges
 - props
 - powered winches
 - snatch blocks
 - wire rope winches
 - lever pull (e.g. come-alongs)
- identify hazards and use appropriate risk controls and safety measures and equipment
- safely erect and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards and Commonwealth and state or territory work health and safety (WHS) legislation, regulations, standards and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging basic level:
 - instability of work areas
 - damaged or poor-quality equipment
 - overhead and underground hazards
 - electrical items
 - mobile plant
 - insufficient lighting
 - wind and other adverse weather conditions
 - traffic
 - pedestrian traffic
 - hazardous manual tasks
 - falling objects
 - falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding and other structures as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - traffic control
 - pedestrian barricades
 - PPE
 - adequate illumination

- safety structures and screens
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
 - rigging structures and equipment:
 - elevated work platforms
 - cantilevered crane loading platforms
 - portal frames
 - hoists
 - pre-cast concrete members
 - mast climbing work platform
 - safety screens and shutters
 - safety nets
 - associated gear:
 - power and manually operated lifting gear
 - lifting clutches
 - tag lines
 - FSWR
 - chains
 - wire and synthetic slings
 - shackles
 - terminations
 - wedge sockets
 - eye bolts
 - beam clamps
 - pipe clamps
 - plate clamps
 - rope grips
 - turnbuckles
 - chain blocks
 - lever blocks
 - lever-action winches
 - sheaves
 - spreader bars
 - lifting beams
 - jacks
 - levers
 - skates
 - wedges
 - rollers
 - beam trolley

- props
- safety equipment:
 - full-body safety harness
 - energy absorber
 - lanyard
 - inertia reel (fall arrester)
 - static safety lines
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight, skin and sun protection
- communication equipment:
 - two-way radios
 - whistles
- relevant persons:
 - doggers
 - riggers
 - crane operators
 - engineers
 - supervisors
- ground and foundation suitability:
 - rough, uneven ground
 - backfilled ground
 - soft soils
 - hard compacted soil
 - rock
 - bitumen
 - concrete
 - suspended concrete floors
 - building roofs
 - landings
 - ground bearing pressure
- mathematical processes for estimating and measuring loads for basic rigging
- techniques for making temporary connections.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - incident reports
 - workplace procedures, including SWMSs and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLRG3002 Licence to perform rigging intermediate level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Changes to the Application of the unit and Performance Criteria 4.3.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform intermediate rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a building or structure. Riggers ensure the stability of those members and set up and dismantle cranes and hoists.

This unit includes rigging work involving:

- hoists with jibs and self-climbing hoists
- cranes, conveyors, dredges and excavators
- tilt slabs
- demolition of structures or plant
- multiple lifts.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3001 Licence to perform rigging basic level* or holding a valid licence for basic rigging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLRG3001 Licence to perform rigging basic level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.
	1.8 Establish required communication methods with relevant persons.

2 Select and inspect equipment.	<table border="0"><tr><td>2.1</td><td>Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.</td></tr><tr><td>2.2</td><td>Select and check PPE.</td></tr><tr><td>2.3</td><td>Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.</td></tr><tr><td>2.4</td><td>Select communication equipment and check that it is working and fit for use.</td></tr></table>	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.	2.2	Select and check PPE.	2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.	2.4	Select communication equipment and check that it is working and fit for use.		
2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.										
2.2	Select and check PPE.										
2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.										
2.4	Select communication equipment and check that it is working and fit for use.										
3 Set up task.	<table border="0"><tr><td>3.1</td><td>Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.</td></tr><tr><td>3.2</td><td>Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.</td></tr><tr><td>3.3</td><td>Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.</td></tr><tr><td>3.4</td><td>Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.</td></tr></table>	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.	3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.	3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.	3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.		
3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.										
3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.										
3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.										
3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.										
4 Undertake intermediate rigging activities.	<table border="0"><tr><td>4.1</td><td>Erect and dismantle all structures and operate plant while maintaining stability, in accordance with workplace and manufacturer requirements.</td></tr><tr><td>4.2</td><td>Conduct a multiple-crane lift.</td></tr><tr><td>4.3</td><td>Erect and dismantle one of the following: a tower crane section or a crane lattice boom section, or a fly jib on a mobile slewing or a non-guyed tower crane.</td></tr><tr><td>4.4</td><td>Lift and install a series of tilt-up concrete panels.</td></tr><tr><td>4.5</td><td>Remove a concrete-encased structural steel column and beam.</td></tr></table>	4.1	Erect and dismantle all structures and operate plant while maintaining stability, in accordance with workplace and manufacturer requirements.	4.2	Conduct a multiple-crane lift.	4.3	Erect and dismantle one of the following: a tower crane section or a crane lattice boom section, or a fly jib on a mobile slewing or a non-guyed tower crane.	4.4	Lift and install a series of tilt-up concrete panels.	4.5	Remove a concrete-encased structural steel column and beam.
4.1	Erect and dismantle all structures and operate plant while maintaining stability, in accordance with workplace and manufacturer requirements.										
4.2	Conduct a multiple-crane lift.										
4.3	Erect and dismantle one of the following: a tower crane section or a crane lattice boom section, or a fly jib on a mobile slewing or a non-guyed tower crane.										
4.4	Lift and install a series of tilt-up concrete panels.										
4.5	Remove a concrete-encased structural steel column and beam.										

- 5 Complete task.
 - 5.1 Remove excess materials from work area.
 - 5.2 Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
 - 5.3 Store plant, equipment and gear in accordance with workplace requirements.
 - 5.4 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLRG3002 Licence to perform rigging intermediate level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
- Changes to the Application of the unit and Performance Criteria 4.3.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by safely performing rigging tasks at an intermediate level, including:

- undertaking a multiple-crane lift of a load of at least 1 tonne and at least 4 m long
- erect and dismantle one of the following:
 - a tower crane section
 - crane lattice boom section
 - a fly jib on a mobile slewing
 - a non-guyed tower crane.
- installing and removing a three-panel structure, with each panel being at least 4 m high, at least 2 m wide and at least 1.5 tonnes
- using the following bends and hitches:
 - round turn
 - two half-hitches.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- use the following associated gear:
 - tag lines
 - flexible steel wire rope (FSWR)
 - chains

- wire and synthetic slings
- shackles
- wedge sockets
- eye bolts
- rope grips
- turnbuckles
- chain blocks
- sheaves
- spreader bars or lifting beams
- snatch blocks
- lifting clutches
- safely erect and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation, regulations, standards and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging intermediate level:
 - instability of work areas
 - damaged or poor-quality equipment
 - overhead and underground hazards
 - electrical items
 - mobile plant
 - insufficient lighting

- wind and other adverse weather conditions
- traffic
- pedestrian traffic
- hazardous manual tasks
- falling objects
- falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - traffic barricades and control
 - pedestrian barricades
 - PPE
 - adequate illumination
 - safety structures and screens
 - exclusion zones
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
 - rigging structures and equipment:
 - concrete tilt-up panels
 - non-guyed light towers
 - scaffolds
 - elevated work platforms
 - personnel box
 - cantilevered crane loading platforms
 - mast climbers
 - safety screens and shutters
 - cranes
 - associated gear:
 - power and manually operated lifting gear
 - lifting clutches
 - snatch blocks
 - tag lines
 - FSWR
 - chains
 - wire and synthetic slings
 - shackles
 - terminations
 - wedge sockets
 - eye bolts

- beam clamps
- pipe clamps
- plate clamps
- wire rope grips
- turnbuckles
- rigging screws
- chain blocks
- lever blocks
- lever-action winches
- sheaves
- spreader bars
- lifting beams
- jacks
- levers
- skates
- wedges
- rollers
- beam trolley
- safety equipment:
 - safety harness
 - energy absorber
 - lanyard
 - inertia reel
 - static safety lines
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight, skin and sun protection
- communication equipment:
 - two-way radios
 - whistles
- relevant persons:
 - doggers
 - riggers
 - load-shifting plant operators
 - engineers
 - supervisors
- ground and foundation suitability:

- rough, uneven ground
- backfilled ground
- soft soils
- hard compacted soil
- rock
- bitumen
- concrete
- suspended concrete floors
- building roofs
- landings
- ground bearing pressure
- mathematical processes for estimating and measuring forces and loads for intermediate rigging
- techniques for making temporary connections by tying bends and hitches:
 - round turn
 - two half-hitches.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - incident reports
 - workplace procedures, including SWMSs and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLRG4001 Licence to perform rigging advanced level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level. Updated to meet the Standards for Training Packages 2012

Application

This unit specifies the skills and knowledge required to safely perform advanced rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a building or structure. Riggers ensure the stability of those members and set up and dismantle cranes and hoists.

This unit applies to rigging work involving:

- gin poles and shear legs
- flying foxes and cable ways
- guyed derricks and structures
- suspended scaffolds and fabricated hung scaffolds.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of *CPCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3002 Licence to perform rigging intermediate level* or holding a valid licence for intermediate rigging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLRG3002 Licence to perform rigging intermediate level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.
	1.8 Establish communication methods with associated personnel.

2	Select and inspect equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
		2.2	Select and check PPE.
		2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.
		2.4	Select communication equipment and check that it is working and fit for use.
3	Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
		3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
		3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
		3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.
4	Undertake advanced rigging activities.	4.1	Erect, operate and dismantle all structures and plant while maintaining stability, in accordance with workplace and manufacturer requirements.
		4.2	Erect gin poles or sheer legs, operate winch to move load, and dismantle.
		4.3	Erect flying fox or cable way, operate to move a load, and dismantle.
		4.4	Erect guyed derrick, operate to move a load, and dismantle.
		4.5	Erect, operate and dismantle suspended scaffold.
		4.6	Install and remove fabricated hung scaffold.

- 5 Complete task.
 - 5.1 Remove excess materials from work area.
 - 5.2 Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
 - 5.3 Store plant, equipment and gear in accordance with workplace requirements.
 - 5.4 Remove risk controls safety measures and equipment.
 - 5.5 Complete handover certificates, and attach scaffolding tags for suspended scaffold and hung scaffold.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLRG4001 Licence to perform rigging advanced level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level. Updated to meet the Standards for Training Packages 2012

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by erecting, using and dismantling the following:

- gin pole or shear leg of a height of 8 m or more and a working load limit of 400 kg or more. The winch must be powered with at least one diversion sheave
- a flying fox or cable way of a height of at least 4 m and a span distance of at least 10 m and able to support at least 200 kg - the rope span may be supported from fixed anchorages, poles, or both
- guyed derricks and structures of a minimum height of 8 m
- a suspended scaffold of a height of at least 4 m with a minimum capacity of at least 200 kg attached by a dual needle system using counterweights and powered winch
- a fabricated hung scaffold of at least 4 m height and 3.4 m length, and consisting of one continuous platform of heavy-duty capacity.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements, including the completion of required handover certificates
- identify hazards and use appropriate risk controls and safety measures and equipment
- use all the associated gear listed under Knowledge Evidence
- safely erect, use and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation, regulations and codes of practice
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging advanced level:
 - instability of work areas
 - damaged or poor-quality equipment
 - overhead and underground hazards
 - electrical items
 - mobile plant
 - insufficient lighting
 - wind and other adverse weather conditions
 - traffic
 - pedestrian traffic
 - hazardous manual tasks
 - falling objects
 - falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - traffic barricades and control
 - pedestrian barricades
 - PPE:
 - hard hat
 - safety boots
 - gloves

- high-visibility clothing
 - breathing, hearing, sight, skin and sun protection
- adequate illumination
- safety structures and screens
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
 - rigging structures and equipment:
 - gin poles
 - flying foxes
 - shear legs
 - cable ways
 - guyed derricks
 - suspended scaffolds
 - fabricated hung scaffolds
 - associated gear:
 - power and manually operated lifting gear
 - tag lines
 - flexible steel wire rope (FSWR)
 - chains
 - wire and synthetic slings
 - shackles
 - terminations
 - eye bolts
 - beam clamps
 - rope grips
 - turnbuckles
 - rigging screws
 - lever blocks
 - lever-action winches
 - sheaves
 - scaffold and rigging tools
 - jacks
 - levers
 - skates
 - wedges
 - rollers
 - girder trolley
 - safety equipment:
 - safety harness
 - energy absorber

- lanyard
- inertia reel
- static safety lines
- communication equipment:
 - two-way radios
 - whistles
- associated personnel:
 - doggers
 - riggers
 - crane operators
 - engineers
 - supervisors
- ground and foundation suitability:
 - rough, uneven ground
 - backfilled ground
 - soft soils
 - hard compacted soil
 - rock
 - bitumen
 - concrete
 - suspended concrete floors
 - building roofs
 - landings
 - ground bearing pressure
- supporting beams or structures load bearing capacity
- mathematical processes for calculating loads for advanced rigging.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
- equipment and maintenance checklists
- record system for service and maintenance history
- incident reports
- workplace procedures, including SWMSs and emergency plans
- equipment manuals and manufacturer specifications
- relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform basic scaffolding work.

Scaffolding work involves erecting, altering or dismantling a temporary structure to support a platform from which a person or object could fall more than four metres.

This unit applies to scaffolding work involving:

- modular or pre-fabricated scaffolds
- cantilevered materials hoists with a maximum working load of 500 kg
- ropes
- gin wheels
- safety nets and static lines
- bracket scaffolds (tank and formwork).

Scaffolding work is undertaken in construction and other industries where temporary structures are erected, altered and dismantled.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

Nil.

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and read information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and read information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required scaffold and associated equipment.
	1.7 Calculate loads exerted on and by the scaffold and scaffolding equipment.
	1.8 Establish required communication methods with relevant persons.
2 Select and inspect	2.1 Select risk controls and equipment and fall protection,

- plant and equipment. and check that it is working and fit for purpose.
- 2.2 Select and check PPE.
- 2.3 Inspect scaffold and associated equipment for defects, and isolate, tag out, report and record defective items.
- 2.4 Select communication equipment and check that it is working and fit for use.
- 3 Set up task.
- 3.1 Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
- 3.2 Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
- 3.3 Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
- 3.4 Prepare footings to support scaffold and scaffold equipment.
- 3.5 Prepare scaffold and scaffold equipment, and place in a stable position ready for erection.
- 4 Undertake basic scaffolding activities.
- 4.1 Erect and dismantle scaffold and equipment while maintaining stability, in accordance with workplace and manufacturer requirements.
- 4.2 Erect and dismantle modular or pre-fabricated scaffold.
- 4.3 Erect and dismantle cantilevered materials hoists.
- 4.4 Apply methods for making temporary connections using fibre ropes.
- 4.5 Erect, operate and dismantle gin wheels.
- 4.6 Erect and dismantle safety nets and static lines.
- 4.7 Erect and dismantle bracket scaffolds (tank and formwork).

- 5 Complete task.
 - 5.1 Remove excess materials from work area.
 - 5.2 Inspect completed scaffolding task for compliance with task requirements, complete handover certificate and forward to relevant persons, and complete and attach scaffold tag.
 - 5.3 Inspect all plant and equipment for defects, and isolate, tag out and report defective items.
 - 5.4 Store all plant and equipment in accordance with workplace requirements.
 - 5.5 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by erecting, altering and dismantling the following:

- a modular scaffold of a minimum of three bays with a return (tied in), ladder and stair access, bay extension platform (hop-up brackets) incorporating a safety screen and a platform height of more than 4 m
- a bracket scaffold (including tank, formwork and top-plate hung bracket)
- a mobile scaffold of above 4 m height
- a gin wheel
- a cantilever materials hoist with a maximum working load of 500 kg
- a safety net and static line.

The candidate must use the following bends, hitches and splices:

- short splice
- sheet bend
- clove hitch
- timber hitch.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs), and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements, including the completion of any required handover certificates and scaffold tags
- identify hazards and use appropriate risk controls and safety measures and equipment

- use the following associated gear and stability equipment:
 - flexible steel wire rope (FSWR) and fittings
 - ladders
 - tie tubes and fittings
 - fibre rope
 - stairways and screening
 - tape measures
 - scaffold belts
 - hand tools
 - sole plates and boards
 - screw jacks
 - levels
 - props
 - bracing.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for scaffolding under Australian Standards, and Commonwealth and state or territory WHS legislation, regulations and codes of practice, and local government regulations
- workplace information, including legislative requirements, covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in scaffolding activities:
 - instability of work areas
 - damaged or poor-quality equipment
 - overhead and underground hazards
 - electrical items

- mobile plant
- insufficient lighting
- wind and other adverse weather conditions
- traffic
- pedestrian traffic
- hazardous manual tasks
- falling objects
- falls from heights
- minimum clearance distance for scaffolding work from powerlines and electrical equipment as determined by the relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - establishment of safe and adequate access and egress
 - adequate illumination
 - traffic barricades and control
 - pedestrian barricades
 - safety harness
 - energy absorber
 - lanyard
 - inertia reel
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight, skin and sun protection
- application, limitation, operation, load capabilities and safety requirements of:
 - modular and prefabricated scaffolds
 - cantilevered materials hoists with a maximum working load of 500 kg
 - ropes
 - gin wheels
 - safety nets and static lines
 - bracket scaffolds (tank and formwork)
- dimensions of scaffold, maximum capacities and types of loads:
 - static loads
 - live loads
 - dead loads
 - dynamic loads
 - load capacities and minimum dimensions for light duty, medium duty, heavy duty and special duty scaffolds

- engineering and supplier specifications
- mathematical processes for estimating and measuring loads for scaffolds
- types and functions of associated equipment, including selection, inspection, care, handling, application, storage and limitations of:
 - scaffolding components and equipment
 - FSWR and fittings
 - ladders
 - tie tubes and fittings
 - fibre rope
 - stairways and screening
 - box spanners
 - spirit levels
 - tape measures
 - scaffold belts
 - podgers
 - hammers
 - wire nips
 - wrenches
 - torpedo levels
 - spanners
 - cutters
 - hammer drills
 - materials hoists
 - gin wheels
 - safety nets
 - static lines and fittings
- stability equipment and processes:
 - sole plates and boards
 - screw jacks
 - levelling
 - ties
 - bracing and propping
- relevant persons:
 - other scaffolders
 - supervisors
- ground and foundation suitability:
 - ground bearing pressure
 - rough and uneven ground
 - backfilled ground
 - soft soils

- hard compacted soil
- rock
- bitumen
- concrete
- scaffolding erection, alteration and dismantling techniques
- workplace policies and procedures for scaffolding:
 - erecting, altering and dismantling scaffolds
 - erecting and stabilising cantilever hoists and scaffolds
 - manufacturer requirements for scaffolding
 - working safely at heights
 - setting up fall prevention and fall arrest systems, including safety nets
 - understanding structural charts and structural plans.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - reporting procedures
 - workplace procedures, including SWMSs and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform intermediate scaffolding work.

Scaffolding work involves erecting, altering or dismantling a temporary structure to support a platform from which a person or object could fall more than four metres.

This unit applies to scaffolding work involving:

- cantilevered crane loading platforms
- cantilevered scaffolds
- spur scaffolds
- barrow ramps and sloping platforms
- scaffolding associated with perimeter safety screens and shutters
- mast climbing work platforms
- tube and coupler scaffolds (including tube and coupler covered ways and gantries).

Scaffolding work is undertaken in construction and other industries where temporary structures are erected, altered and dismantled.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLSF2001 Licence to erect alter and dismantle scaffolding basic level* or holding a valid licence for basic scaffolding.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLSF2001 Licence to erect, alter and dismantle scaffolding basic level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required scaffold and associated equipment.
	1.7 Calculate loads exerted on and by the scaffold and scaffolding equipment.
	1.8 Establish required communication methods with relevant

persons.

2	Select and inspect plant and equipment.	2.1	Select risk-control equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
		2.2	Select and check PPE.
		2.3	Inspect scaffold and associated equipment for defects, and isolate, tag out, report and record defective items.
		2.4	Select communication equipment and check that it is working and fit for use.
3	Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
		3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
		3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
		3.4	Prepare footings to support scaffold and scaffold equipment.
		3.5	Prepare scaffold and scaffold equipment, and place in a stable position ready for erection.
4	Undertake intermediate scaffolding activities.	4.1	Erect and dismantle scaffold and equipment while maintaining stability, in accordance with workplace and manufacturer requirements.
		4.2	Erect and dismantle cantilevered crane loading platforms.
		4.3	Erect and dismantle cantilevered scaffolds.
		4.4	Erect and dismantle spur scaffolds.
		4.5	Erect and dismantle barrow ramps and sloping platforms.

- 4.6 Erect and dismantle scaffolding associated with perimeter safety screens or shutters.
 - 4.7 Erect and dismantle mast climbing work platforms.
 - 4.8 Erect tube and coupler scaffolds, including tube and coupler covered ways and gantries.
- 5 Complete task.
- 5.1 Remove excess materials from work area.
 - 5.2 Inspect completed scaffolding task for compliance with task requirements, complete handover certificate and forward to relevant persons, and complete and attach scaffold tag.
 - 5.3 Inspect scaffold and scaffold equipment for defects, and isolate, tag out and report defective items.
 - 5.4 Store scaffold and scaffold equipment in accordance with workplace requirements.
 - 5.5 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level

Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by safely erecting, altering and dismantling the following:

- cantilevered and spurred scaffold
- barrow ramp or sloping platform
- tube and coupler scaffold of at least four medium duty bays long and two lifts high with a working platform of at least 4 m in height with a ladder access. It must have a cantilevered platform at the rear of the scaffold and include a ramp constructed with steel tube from the rear of the scaffold to a height of 1 m and a width of at least 675 mm, and include handrails, toe boards and mid rails; all planks must be secured
- cantilevered crane-loading platform
- mast climbing work platform.

The candidate must also produce a tube and coupler scaffold plan in accordance with Australian Standards, demonstrating the following:

- diagonal staggering of standards
- staggering of ledgers
- joins of ledgers within 300 mm of standards
- joins of standards within 300 mm of ledgers
- positioning of ledgers.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists

- perform all activities in compliance with workplace-specific requirements, safe work requirements and manufacturer requirements, including the completion of any required handover certificates and scaffold tags
- identify hazards and use appropriate risk controls and safety measures and equipment
- use the following associated gear and stability equipment:
 - planks
 - flexible steel wire rope (FSWR) and fittings
 - ladders
 - tie tubes and fittings
 - fibre rope
 - tape measures
 - scaffold belts
 - hand tools
 - levels
 - sole plates and boards
 - screw jacks
 - props
 - bracing.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for scaffolding under Australian Standards, Commonwealth and state or territory work health and safety (WHS) legislation, regulations and codes of practice, and local government regulations
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in scaffolding activities:
 - instability of work areas

- damaged or poor-quality equipment
- overhead and underground hazards
- electrical items
- mobile plant
- insufficient lighting
- wind and other adverse weather conditions
- traffic
- pedestrian traffic
- hazardous manual tasks
- falling objects
- falls from heights
- minimum clearance distance for scaffolding work from powerlines and electrical equipment as determined by the relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - establishment of safe and adequate access and egress
 - adequate illumination
 - traffic barricades and control
 - pedestrian barricades
 - safety harness
 - energy absorber
 - lanyard
 - inertia reel
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight and skin (sun) protection
- application, limitation, operation, load capabilities and safety requirements of:
 - cantilevered crane loading platforms
 - cantilevered scaffolds
 - spur scaffolds
 - barrow ramps and sloping platforms
 - scaffolding associated with perimeter safety screens and shutters
 - mast climbing work platforms
 - tube and coupler scaffolds, including tube and coupler covered ways and gantries
- dimensions of scaffold, maximum capacities and types of loads:
 - static loads
 - live loads

- dead loads
- dynamic loads
- load capacities and minimum dimensions for light duty, medium duty, heavy duty and special duty scaffolds
- engineering and supplier specifications
- mathematical processes for estimating loads for scaffolds
- design of tube and coupler scaffolding
- types and functions of associated equipment, including selection, inspection, care, handling, application, storage and limitations of:
 - scaffolding components and equipment
 - independent adjustable props
 - mast climbers
 - safety screens and shutters
 - planks
 - FSWR and fittings
 - ladders
 - tie tubes and fittings
 - fibre rope
 - stairways and screening
 - box spanners
 - hammers
 - tape measures
 - scaffold belts
 - podgers
 - wire nips
 - wrenches
 - torpedo levels
 - shovels
 - spanners
 - cutters
 - hammer drills
- stability equipment and processes:
 - sole plates and boards
 - screw jacks
 - levelling
 - ties
 - bracing and propping
- relevant persons:
 - other scaffolders
 - doggers and riggers

- designers and engineers
- supervisors
- ground and foundation suitability:
 - rough and uneven ground
 - backfilled ground
 - soft soils
 - hard compacted soil
 - rock
 - bitumen
 - concrete
- workplace policies and procedures for scaffolding:
 - erecting, altering and dismantling scaffolds
 - manufacturer requirements for scaffolding
 - working safely at heights
 - setting up fall prevention and fall arrest systems, including safety nets
 - interpreting structural charts and structural plans.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
- equipment and maintenance checklists
- record system for service and maintenance history
- reporting procedures
- workplace procedures, including SWMSs and emergency plans
- equipment manuals and manufacturer specifications
- relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCLSF4001 Licence to erect, alter and dismantle scaffolding advanced level

Modification History

- Release 3 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF4001A Licence to erect, alter and dismantle scaffolding advanced level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform advanced scaffolding work.

Scaffolding work involves erecting, altering or dismantling a temporary structure to support a platform from which a person or object could fall more than four metres.

This unit applies to scaffolding work involving:

- cantilevered hoists
- hung scaffolds, including scaffolds hung from tubes, wire ropes or chains
- suspended scaffolds.

Scaffolding work is undertaken in construction and other industries where temporary structures are erected, altered and dismantled.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLSF3001 Licence to erect alter and dismantle scaffolding intermediate level* or holding a valid licence for intermediate scaffolding.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLSF3001 Licence to erect, alter and dismantle scaffolding intermediate level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required scaffold and associated equipment.
	1.7 Calculate loads exerted on and by the scaffold and scaffolding equipment.
	1.8 Establish required communication methods with relevant

persons.

2	Select and inspect plant and equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
		2.2	Select and check PPE.
		2.3	Inspect scaffold and associated equipment for defects, and isolate, tag out, report and record defective items.
		2.4	Select communication equipment and check that it is working and fit for use.
3	Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
		3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
		3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
		3.4	Prepare footings to support scaffold and scaffold equipment.
		3.5	Prepare scaffold and scaffold equipment, and place in a stable position ready for erection.
4	Undertake advanced scaffolding activities.	4.1	Erect and dismantle scaffold and equipment while maintaining stability, in accordance with workplace and manufacturer requirements.
		4.2	Erect and dismantle a cantilevered hoist.
		4.3	Erect and dismantle a hung scaffold that is hung from chains, flexible steel wire rope (FSWR) or tubes.
		4.4	Erect and dismantle a suspended scaffold attached by a dual needle system using counterweights and powered winch.

- 5 Complete task.
 - 5.1 Remove excess materials from work area.
 - 5.2 Inspect completed scaffolding task for compliance with task requirements, complete handover certificate and forward to relevant persons, and complete and attach scaffold tag.
 - 5.3 Inspect scaffold and scaffold equipment for defects, and isolate, tag out and report defective items.
 - 5.4 Store scaffold and scaffold equipment in accordance with workplace requirements.
 - 5.5 Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLSF4001A Licence to erect, alter and dismantle scaffolding advanced level.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLSF4001 Licence to erect, alter and dismantle scaffolding advanced level

Modification History

- Release 3 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.
Change to the Application of the unit.
- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Minor edits to formatting.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCCLSF4001A Licence to erect, alter and dismantle scaffolding advanced level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency of this unit, a candidate must meet the elements and performance criteria by safely erecting, altering and dismantling:

- a cantilevered hoist consisting of at least three mast sections tied in accordance with the specifications, on at least one occasion
- a tube and coupler hung scaffold of at least 4 m height and 3.6 m length and consisting of one continuous platform of heavy-duty capacity which is hung from chains, flexible steel wire rope (FSWR) or tubes
- a suspended scaffold of at least 4 m height and at least 200 kg minimum capacity attached by a dual needle system using counterweights and powered winch.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements, including the completion of any required handover certificates
- identify hazards and use appropriate risk controls and safety measures and equipment
- use the following associated gear and stability equipment:
 - counterweights
 - prefabricated needles
 - swinging stages

- winches
- FSWR and fittings
- ladders
- tie tubes and fittings
- fibre rope
- hand tools
- levels
- tape measures
- ties.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for scaffolding under Australian Standards, Commonwealth and state or territory work health and safety (WHS) legislation, regulations and codes of practice, and local government regulations
- workplace information, including legislative requirements covered by:
 - SWMSs
 - permits and certifications
 - information about equipment:
 - service and maintenance checklists and records
 - manufacturer and supplier specifications and manuals
 - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - use of personal protective equipment (PPE)
- hazards commonly encountered in scaffolding activities:
 - instability of work areas
 - damaged or poor-quality equipment
 - overhead and underground hazards
 - electrical items
 - mobile plant
 - insufficient lighting
 - wind and other adverse weather conditions
 - traffic
 - pedestrian traffic

- hazardous manual tasks
- falling objects
- falls from heights
- minimum clearance distance for scaffolding work from powerlines and electrical equipment as determined by the relevant state or territory authority or electrical supply authority
- risk controls and equipment:
 - establishment of safe and adequate access and egress
 - adequate illumination
 - traffic barricades and control
 - pedestrian barricades
 - safety harness
 - energy absorber
 - lanyard
 - inertia reel
- PPE:
 - hard hat
 - safety boots
 - gloves
 - high-visibility clothing
 - breathing, hearing, sight, skin and sun protection
- application, limitation, operation, load capabilities and safety requirements of:
 - cantilevered hoists
 - hung scaffolds, including scaffolds hung from tubes, wire ropes or chains
 - suspended scaffolds
- dimensions of scaffold, maximum capacities and types of loads:
 - static loads
 - live loads
 - dead loads
 - dynamic loads
 - load capacities and minimum dimensions for light duty, medium duty, heavy duty and special duty scaffolds
 - engineering and supplier specifications
- mathematical processes for estimating and measuring loads for scaffolds
- design of tube and coupler scaffolding
- types and functions of associated equipment, including selection, inspection, care, handling, application, storage and limitations of:
 - scaffold components and equipment
 - counterweights
 - prefabricated needles
 - swinging stages

- winches
- FSWR and fittings
- ladders
- tie tubes and fittings
- fibre rope
- stairways and screening
- box spanners
- hammers
- spirit levels
- tape measures
- scaffold belts
- podgers
- wire nips
- wrenches
- torpedo levels
- spanners
- cutters
- hammer drills
- stability equipment and processes:
 - sole plates and boards
 - screw jacks
 - levelling
 - ties
 - bracing and propping
- relevant persons:
 - other scaffolders
 - doggers and riggers
 - engineers and designers
 - supervisors
- load bearing capacity of supporting beams or structures
- workplace policies and procedures for scaffolding:
 - erecting, altering and dismantling scaffolds and equipment
 - manufacturer requirements for scaffolding
 - working safely at heights
 - setting up fall prevention and fall arrest systems, including safety nets
 - interpreting structural charts and structural plans.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
 - equipment and maintenance checklists
 - record system for service and maintenance history
 - reporting procedures
 - workplace procedures, including SWMSs and emergency plans
 - equipment manuals and manufacturer specifications
 - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

Modification History

Release 1.

Supersedes and equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Application

This unit specifies the outcomes required to carry out work health and safety (WHS) requirements through safe work practices in all on- or off-site construction workplaces.

It requires the performance of work in a safe manner through awareness of risks and work requirements, and the planning and performance of safe work practices with concern for personal safety and the safety of others.

The unit covers fundamental WHS requirements necessary to undertake work tasks within any sector in the construction industry. It includes the identification of hazardous materials, including asbestos, and compliance with legislated work safety practices. It does not cover removal of asbestos, which is a licensed activity.

It applies to workers in the construction industry.

This unit also relates directly to the general construction induction training requirements of the Model Work Health and Safety Regulations 2011 and relevant occupational health and safety regulations for Victoria and for Western Australia. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* covers these induction training requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1. Identify and assess risks.	1.1 Identify, assess and report hazards in the work area to designated personnel. 1.2 Report safety risks in the work area based on identified hazards, to designated personnel. 1.3 Follow safe work practices, duty of care requirements and safe work instructions for controlling risks. 1.4 Contribute to WHS, hazard, accident or incident reports in accordance with workplace procedures, Australian government and state or territory WHS legislation, and relevant information.
2. Identify hazardous materials and other hazards on work sites.	2.1 Correctly identify and, if appropriate, handle and use hazardous materials on a work site in accordance with legislative requirements, and workplace policies and procedures. 2.2 Apply measures for controlling risks and construction hazards effectively and immediately. 2.3 Use appropriate signs and symbols to secure hazardous materials that have safety implications for self and other workers, immediately they are identified. 2.4 Identify asbestos-containing materials on a work site and report to designated personnel.
3. Plan and prepare for safe work practices.	3.1 Identify, wear, correctly fit, use and store correct personal protective equipment and clothing for each area of construction work in accordance with workplace procedures 3.2 Select tools, equipment and materials, and organise tasks in conjunction with other personnel on site and in accordance with workplace procedures. 3.3 Determine required barricades and signage, and erect at the appropriate site location. 3.4 Apply material safety data sheets (MSDSs), job safety analyses (JSAs) and safe work method statements (SWMSs) relevant to the work to be performed.
4. Apply safe work practices.	4.1 Carry out tasks in a manner that is safe for operators, other personnel and the general community, in accordance with legislative requirements, and workplace policies and procedures. 4.2 Use plant and equipment guards in accordance with manufacturers' specifications, work site regulations and Australian Standards. 4.3 Follow procedures and report hazards, incidents and injuries

	to relevant authorities. 4.4 Recognise and do not use prohibited tools and equipment in areas containing identified asbestos. 4.5 Identify and follow requirements of work site safety signs and symbols. 4.6 Clear and maintain work site area to prevent and protect self and others from incidents and accidents, and to meet environmental requirements.
5. Follow emergency procedures.	5.1 Identify designated personnel in the event of an emergency for communication purposes. 5.2 Follow safe workplace procedures for dealing with accidents, fire and other emergencies, including identification and use, if appropriate, of fire equipment within scope of own responsibilities. 5.3 Describe, practice and effectively carry out emergency response and evacuation procedures when required. 5.4 Carry out emergency first aid treatment of minor injuries and, as soon as possible, accurately report treatment details to designated personnel.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

Modification History

Release 1.

Supersedes and equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Performance Evidence

To demonstrate competency in this unit, a person must apply WHS requirements, policies and procedures on three separate and different occasions in the construction industry.

In doing this, the person must meet the performance criteria for this unit.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- jurisdictional work health and safety (WHS) and environmental legislation and regulations
- workplace requirements for undertaking all aspects of applying WHS requirements, policies and procedures in the construction industry including interpreting work orders and reporting problems
- procedures and policies for identifying and reporting hazards, safety risks and hazardous materials, including asbestos, in the workplace
- procedures for following safe practices when dealing with hazards and hazardous materials, and controlling risks associated with them
- use of appropriate protective equipment and clothing, choice of tools, use of barricades and signage, and the necessity of following relevant safety procedures as indicated
- methods of safely performing tasks in accordance with legislative requirements and workplace policies and procedures
- procedures for reporting hazards, incidents and injuries
- necessity for keeping work site clear of risks to prevent accidents and to meet environmental requirements
- policies and procedures to be followed in an accident, fire or other type of emergency.

Assessment Conditions

Assessors must satisfy the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment of performance must be undertaken in the workplace or in a simulated workplace environment. Tasks are to be performed to the level of proficiency and within the time limits expected in a workplace.

Assessors are responsible for ensuring that the person demonstrating competency has access to:

- appropriate documents, materials, tools, equipment and personal protective equipment currently used in industry
- requirements of appropriate sections of legislation and regulations
- relevant workplace policies and procedures.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

FBPSUG2022 Operate a waste water treatment system

Modification History

Release	Comments
Release 1	This version released with FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to operate waste water treatment systems to comply with workplace requirements, trade waste agreements and site environmental authority.

The unit applies to individuals who work under supervision in the sugar milling industry.

All work must be carried out to comply with workplace procedures according to state/territory health and safety regulations, legislation and standards that apply to the workplace.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Sugar milling (SUG)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare the waste water treatment process for operation	1.1 Confirm chemicals and test equipment are ready for use 1.2 Confirm services are available and ready for operation 1.3 Select, fit and use personal protective equipment according to workplace safety procedures

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.4 Conduct pre-operational checks according to operating procedures 1.5 Calibrate instrumentation and test equipment according to operating specifications 1.6 Identify and report health and safety hazards and maintenance requirements according to workplace safety procedures
2. Operate and monitor the waste water treatment process	2.1 Start the waste water treatment system according to operating procedures 2.2 Confirm operating condition is maintained within operating requirements 2.3 Monitor, test and adjust waste water quality according to operating procedures 2.4 Operate first flush systems during rainfall events 2.5 Ensure the work area is maintained to workplace cleaning standards
3. Analyse and respond to abnormal performance	3.1 Analyse water condition and plant operating conditions according to workplace procedures and manufacturer's guidelines 3.2 Take corrective action in response to hazards, out-of-specification test results and/or plant performance 3.3 Implement emergency procedures according to workplace safety procedures
4. Hand over waste water treatment system	4.1 Maintain workplace records according to workplace procedures 4.2 Carry out handover according to workplace procedures 4.3 Ensure operators are aware of system status and related equipment at completion of handover
5. Shut down the waste water treatment system	5.1 Safely shut down the system according to operating procedures 5.2 Prepare the system for storage in shutdown mode according to operating procedures 5.3 Identify and report operational maintenance requirements according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Interpret information in workplace documentation
Numeracy	Interpret production and process control indicators and data
Navigate the world of work	Apply workplace procedures relevant to own role
Interact with others	Apply workplace communication practices to report issues or provide information
Get the work done	- Access and interpret waste water treatment system process control panels and system - Make routine decisions to correct abnormal performance of waste water treatment system

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPSUG2022 Operate a waste water treatment system	FDFSUG222A Operate a waste water treatment system	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPSUG2022 Operate a waste water treatment system

Modification History

Release	Comments
Release 1	This version released with FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has operated a waste water treatment system in line with workplace contexts and demonstrated each of the following points at least once:

- conducted pre-start checks of equipment and services
- selected, fitted and used required personal protective equipment (PPE)
- operated, monitored and adjusted waste water treatment system according to operating procedures
- maintained work area to meet cleaning standards
- handled chemicals safely
- reported health and safety risks and maintenance requirements
- performed shutdown procedures
- conducted shift handover procedure
- taken corrective action in response to typical operating faults, out-of-specification results or non-compliance
- recorded waste water treatment information
- followed waste water system operating procedures.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- equipment purpose and operating principles of waste water treatment equipment and methods
- water cycles for trade waste, storm water and sewerage, including sources and flow patterns
- purpose of chemicals used in waste water treatment systems
- purpose of first flush systems and their relationship with the waste water treatment system

- typical causes of non-conforming water quality, and corrective action required
- key health and safety requirements for operating waste water treatment systems:
 - hazards related to waste water system operation, and associated control measures
 - correct use of PPE
 - lock-out, tag-out and isolation procedures
- procedures for operational and long-term shutdown
- environmental issues and controls for operating waste water treatment systems:
 - company policy relating to environmental performance
 - waste characteristics and treatment methods
 - waste handling requirements and procedures
- procedures and responsibility for reporting problems for operating waste water treatment systems
- recording requirements and procedures for operating waste water treatment systems.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a sugar milling workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - PPE
 - waste water treatment system and related chemicals
 - water testing equipment
 - workplace information recording system
- specifications:
 - operating procedures and related advice on equipment operation
 - water quality sampling and test procedures
 - workplace cleaning standards and procedures
 - workplace information requirements and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to perform cardiopulmonary resuscitation (CPR) in line with the Australian Resuscitation Council (ARC) guidelines.

This unit applies to all persons who may be required to provide CPR, in a range of situations, including community and workplace settings.

Specific licensing/regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element.

1. Respond to an emergency situation.

- 1.1. Recognise and assess an emergency situation.
- 1.2. Ensure safety for self, bystanders and casualty.
- 1.3. Assess the casualty and recognise the need for cardiopulmonary resuscitation (CPR).
- 1.4. Seek assistance from emergency services.

2. Perform CPR procedures.

- 2.1. Perform CPR in accordance with the ARC guidelines.
- 2.2. Display respectful behaviour towards casualty.
- 2.3. Operate an automated external defibrillator (AED) according to manufacturers' instructions.

3. Communicate details of the incident.

- 3.1. Accurately convey incident details to emergency services.
- 3.2. Report details of incident in line with appropriate workplace or site procedures.
- 3.3. Maintain privacy and confidentiality of information in line with statutory or organisational policies.

- 4. Review the incident.
 - 4.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required.
 - 4.2. Contribute to a review of the first aid response as required.

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and not equivalent to HLTAID001 Perform cardiopulmonary resuscitation

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

Assessment Requirements for HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the workplace or community setting.

There must be evidence that the candidate has completed the following tasks in line with State/Territory regulations, first aid codes of practice, first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies and workplace or site procedures:

- managed, in line with ARC guidelines, the unconscious, breathing casualty including appropriate positioning to reduce the risk of airway compromise
- managed, in line with ARC guidelines, the unconscious, non-breathing adult, including:
 - performing at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
 - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
 - demonstrating a rotation of single rescuer operators with minimal interruptions to compressions
 - responding appropriately in the event of regurgitation or vomiting
 - handing over to emergency services
 - providing an accurate verbal report of the incident
 - reviewing the incident
- managed, in line with ARC guidelines, the unconscious, non-breathing infant, including:
 - performing at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- guidelines and procedures including:
 - relevant ARC guidelines to managing the unconscious breathing and non-breathing casualty and provision of CPR
 - potential incident hazards and risk minimisation processes when providing first aid

- infection control procedures, including use of standard precautions and resuscitation barrier devices
- requirements for currency of skill and knowledge
- first aid codes of practice
- appropriate workplace or site procedures relevant to the provision of first aid
- legal, workplace and community considerations, including:
 - duty of care requirements
 - own skills and limitations
 - consent and how it relates to the conscious and unconscious casualty
 - privacy and confidentiality requirements
 - awareness of potential need for stress management techniques and available support for rescuers
- considerations when providing CPR, including:
 - upper airway and effect of positional change
 - appropriate duration and cessation of CPR
 - appropriate use of an AED
 - safety and maintenance procedures for an AED
 - chain of survival
 - how to access emergency services
- techniques for providing CPR to adults, children and infants including:
 - how to recognise that a casualty is unconscious and not breathing normally
 - rate, ratio and depth of compressions and ventilations
 - correct hand positioning for compressions
 - basic anatomy, physiology and the differences between adults, children and infants relating to CPR.

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Due to the nature of this type of training, it is acceptable for the performance evidence to be collected in a simulated environment.

Compression and ventilation skills must be demonstrated on resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures.

Assessment must ensure access to:

- adult and infant resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures
- AED training devices
- personal protective equipment (PPE).

Simulated assessment environments must simulate real-life situations where these skills and knowledge would be performed, with all the relevant equipment and resources of that workplace or community environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and must hold this unit or demonstrate equivalent skills and knowledge to that contained within this unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

HLTAID011 Provide First Aid

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to provide a first aid response to a casualty in line with first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies.

The unit applies to all persons who may be required to provide a first aid response in a range of situations, including community and workplace settings.

Specific licensing/regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element.

1. Respond to an emergency situation.

- 1.1. Recognise and assess an emergency situation.
- 1.2. Ensure safety for self, bystanders and casualty.
- 1.3. Assess the casualty and recognise the need for first aid response.
- 1.4. Seek assistance from emergency services.

2. Apply appropriate first aid procedures.

- 2.1. Perform cardiopulmonary resuscitation (CPR) in accordance ARC guidelines.
- 2.2. Provide first aid in accordance with established first aid principles.
- 2.3. Display respectful behaviour towards casualty.
- 2.4. Obtain consent from casualty where possible.
- 2.5. Use available resources and equipment to make the casualty as comfortable as possible.
- 2.6. Operate first aid equipment according to manufacturers' instructions.
- 2.7. Monitor the casualty's condition and respond in accordance with first aid principles.

3. Communicate details of the incident.	3.1. Accurately convey incident details to emergency services.
	3.2. Report details of incident in line with appropriate workplace or site procedures.
	3.3. Complete applicable workplace or site documentation, including incident report form.
	3.4. Maintain privacy and confidentiality of information in line with statutory or organisational policies.
4. Review the incident.	4.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required.
	4.2. Contribute to a review of the first aid response as required.

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and not equivalent to HLTAID003 Provide first aid

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

Assessment Requirements for HLTAID011 Provide First Aid

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the workplace or community setting.

There must be evidence that the candidate has completed the following tasks in line with State/Territory regulations, first aid codes of practice, first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies and workplace or site procedures:

- managed, in line with ARC guidelines, the unconscious, breathing casualty including appropriate positioning to reduce the risk of airway compromise
- managed, in line with ARC guidelines, the unconscious, non-breathing adult, including:
 - performing at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
 - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
 - demonstrating a rotation of single rescuer operators with minimal interruptions to compressions
 - responding appropriately in the event of regurgitation or vomiting
- managed, in line with ARC guidelines, the unconscious, non-breathing infant, including:
 - performing at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface
- managed casualties, with the following:
 - anaphylaxis
 - asthma
 - non-life-threatening bleeding
 - choking
 - envenomation, using pressure immobilisation
 - fractures, dislocations, sprains and strains, using appropriate immobilisation techniques
 - minor wound cleaning and dressing
 - nosebleed
 - shock

- responded to at least one simulated first aid incident contextualised to the candidate's workplace or community setting, where the candidate has no knowledge of the casualty's condition prior to starting treatment, including:
 - identifying the casualty's illness or injury through history, signs and symptoms
 - using personal protective equipment (PPE) as required
 - providing appropriate first aid treatment
 - conveying incident details to emergency services or advising casualty on any required post incident action
 - providing an accurate verbal and written report of the incident
 - reviewing the incident.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- guidelines and procedures including:
 - ARC guidelines relevant to the provision of first aid
 - first aid guidelines from Australian national peak clinical bodies
 - potential incident hazards and risk minimisation processes when providing first aid
 - infection control procedures, including use of standard precautions and resuscitation barrier devices
 - requirements for currency of skill and knowledge
 - first aid codes of practice
 - appropriate workplace or site procedures relevant to the provision of first aid
 - contents of first aid kits
- legal, workplace and community considerations including:
 - duty of care requirements
 - own skills and limitations
 - consent and how it relates to the conscious and unconscious casualty
 - privacy and confidentiality requirements
 - awareness of potential need for stress management techniques and available support for rescuers
- considerations when providing CPR, including:
 - upper airway and effect of positional change
 - appropriate duration and cessation of CPR
 - appropriate use of an AED
 - safety and maintenance procedures for an AED
 - chain of survival
 - how to access emergency services
- techniques for providing CPR to adults, children and infants including:
 - how to recognise that a casualty is unconscious and not breathing normally

- rate, ratio and depth of compressions and ventilations
- correct hand positioning for compressions
- basic anatomy, physiology and the differences between adults, children and infants relating to CPR
- signs, symptoms and management of the following conditions and injuries:
 - allergic reaction
 - anaphylaxis
 - asthma
 - non-life-threatening and life-threatening bleeding
 - burns
 - cardiac conditions, including chest pain
 - choking
 - diabetes
 - drowning
 - envenomation - all current treatments
 - eye injuries
 - fractures, dislocations, strains and sprains
 - head, neck and spinal injuries
 - hypothermia
 - hyperthermia
 - minor wounds
 - nose-bleed
 - poisoning
 - seizures
 - shock
 - sharps injuries
 - stroke.

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Due to the nature of this type of training, it is acceptable for the performance evidence to be collected in a simulated environment.

Compression and ventilation skills must be demonstrated on resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures.

Assessment must ensure access to:

- adult and infant resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures
- adrenaline auto-injector training device

- AED training devices
- workplace first aid kit
- placebo bronchodilator and spacer device
- different types of wound dressings and bandages
- blankets and items to treat for shock
- personal protective equipment (PPE)
- workplace injury, trauma or illness record, or other applicable workplace or site incident report form.

Simulated assessment environments must simulate real-life situations where these skills and knowledge would be performed, with all the relevant equipment and resources of that workplace or community environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and must hold this unit or demonstrate equivalent skills and knowledge to that contained within this unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

HLTWHS005 Conduct manual tasks safely

Modification History

Release	Comments
Release 1	This version was released in <i>HLT Health Training Package release 2.0</i> and meets the requirements of the 2012 Standards for Training Packages. Significant changes to the elements and performance criteria. New evidence requirements for assessment, including volume and frequency requirements. Significant change to knowledge evidence.

Application

This unit describes the skills and knowledge required to recognise potentially hazardous manual tasks, and then to prepare for and complete those tasks in a safe manner.

This unit applies to all workers involved in manual handling tasks.

The skills in this unit must be applied in accordance with Commonwealth and State/Territory legislation, Australian/New Zealand standards and industry codes of practice. The Hazardous manual tasks code of practice applies to this work.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

Elements define the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element

1. Identify manual tasks involving risk

1.1 Recognise manual tasks that may involve risk to self or others

1.2 Identify risk factors that make the manual task hazardous

1.3 Determine the nature and extent of the risk

1.4 Follow organisation procedures for controlling

ELEMENT**PERFORMANCE CRITERIA**

Elements define the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element

hazardous manual tasks

2. Prepare for manual tasks

2.1 Prepare workplace layout and environment according to organisation procedures

2.2 Organise task and workflow appropriately

2.3 Prepare and package loads for movement, taking account of specific requirements for different materials and organisation procedures

2.4 Select and use personal protective equipment appropriate to the task

2.5 Ensure task is within personal capabilities

3. Complete manual tasks

3.1 Use appropriate posture and handling techniques to reduce muscle load on exertion

3.2 Select, adjust and use mechanical aids and handling devices according to manufacturers instructions

3.3 Pace and schedule tasks according to procedures

4. Contribute to safe work practices

4.1 Identify hazardous manual tasks and report to supervisor according to organisation procedures

4.2 Follow organisation procedures for reporting symptoms of injury or actual injury to self and others

4.3 Participate in workplace safety activities and contribute to the improvement of manual tasks

4.4 Contribute to risk management approach to reduce risks from manual tasks

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and

employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

Assessment Requirements for HLTWHS005 Conduct manual tasks safely

Modification History

Release	Comments
Release 1	This version was released in <i>HLT Health Training Package release 2.0</i> and meets the requirements of the 2012 Standards for Training Packages. Significant changes to the elements and performance criteria. New evidence requirements for assessment, including volume and frequency requirements. Significant change to knowledge evidence.

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the job role. There must be evidence that the candidate has:

- followed legally compliant workplace procedures to prepare for and complete at least 3 different manual tasks relevant to the work role
- contributed to a consultation process about improving manual handling safety

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge required to effectively complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the work role. This includes knowledge of:

- key information from work health and safety (WHS) regulations relating to manual tasks and national code of practice
- role and responsibilities of the employer and employees in relation to manual handling safety
- ways in which individual workers are involved in consultation about workplace health and safety
- reporting mechanisms required for workplace injury and compensation claims
- key aspects of the risk management approach to manual tasks
- risk factors and potential sources of risks of hazardous manual tasks:
 - repetition

- forces
- postures
- vibration
- systems of work
- types of manual task activity and the types of injuries that can result
- the relationship between the human body and risk of injury from performing manual tasks
- functions of the human body:
 - basic function of the spine
 - body postures
 - types of muscles
 - principles of levers
- manual handling techniques that support safe work practice:
 - preparing the load/client
 - preparing the environment
 - using the stronger muscles in the legs where possible, rather than spinal muscles
 - maintaining a neutral spine when lifting and carrying
 - using two hands to lift or carry
 - keeping the load close to the body/centre of gravity
 - avoiding lifting objects above shoulder height
 - minimising repetitive movements
 - positions not held for long periods of time
 - avoiding twisting by repositioning feet whilst turning
- types and operational features of mechanical aids, tools and equipment

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - compliant workplace procedures
 - materials, loads and equipment as required by the individual workplace
- modelling of industry operating conditions, including:
 - presence of hazards
 - integration of situations requiring problem solving

Assessors must satisfy the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705>

ICTICT214 Operate application software packages

Modification History

Release	Comments
Release 2	This version first released with the Information and Communications Technology Training Package Version 8.0. Minor typographical correction in Knowledge Evidence.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, select and operate commercial software packages, including a word-processing and a spreadsheet application package.

It applies to individuals who utilise different software applications within a small to large office environment to produce diverse documents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to operate software packages	1.1 Set up workstation according to work health and safety standards and organisational requirements 1.2 Determine word-processing software task requirements 1.3 Determine spreadsheet software task requirements 1.4 Determine software application according to task

ELEMENT	PERFORMANCE CRITERIA
	requirements 1.5 Identify document purpose, audience and presentation requirements and clarify with required personnel
2. Use word-processing software	2.1 Identify document purpose, audience and presentation requirements and clarify with required personnel 2.2 Determine text-based business document style guide requirements 2.3 Finalise documents using software and technical functions and formatting according to task requirements 2.4 Name, save and print to a Portable Document Format (PDF) according to task requirements
3. Use spreadsheet software	3.1 Identify document purpose, audience and presentation requirements and clarify with personnel as required 3.2 Enter formulas and functions and customise spreadsheet settings according to task requirements 3.3 Name, save and print to PDF document according to task requirements
4. Use third application software package	4.1 Select software application package according to task requirements 4.2 Determine purpose, audience and presentation requirements 4.3 Use technical functions, other data and formatting to finalise document 4.4 Name, save and print to PDF document according to task requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	- Adds, subtracts, multiplies and divides whole numbers and decimals, identifying and selecting formulas and functions to use - Applies order of operations in calculations
Oral communication	Clarifies work requirements using required language, questioning and active listening techniques
Reading	- Interprets textual information and determines organisational standards and job requirements - Identifies and applies symbols, icons and text associated with

Skill	Description
	applications software
Writing	- Enters both written and verbally received information and data into a format applicable to software application - Selects vocabulary, syntax, terminology, labelling and naming conventions applicable to program
Planning and organising	Plans routine tasks with goals and outcomes, taking some limited responsibility in decisions regarding sequencing
Self-management	Follows routine procedures in using digital technology and enters, stores and retrieves information directly applicable to own role
Technology	- Identifies and evaluates purposes, specific functions and key features of basic digital systems and tools - Operates digital systems and tools in completing routine tasks and adapting some functions

Unit Mapping Information

Supersedes and is equivalent to ICTICT203 Operate application software packages.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTICT214 Operate application software packages

Modification History

Release	Comments
Release 2	This version first released with the Information and Communications Technology Training Package Version 8.0. Minor typographical correction in Knowledge Evidence.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce three workplace documents using three different software packages including word processing, spreadsheets and one additional software application package on at least one occasion.

In the course of the above, the candidate must:

- apply workplace health and safety (WHS) principles and responsibilities
- follow organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational application software packages
- technical terminology applicable to reading help files and responding to system help prompts
- industry standard business practices applicable to preparing reports
- features and functions of commercial computing packages and of the industry standard software
- functions and features of Portable Document Formats (PDFs)
- import and export software functions
- document linking functions
- WHS principles and responsibilities

- purpose of input and output devices.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware device
- industry standard software
- documents detailing organisational style guide and policy
- data required in developing software application documents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

ICTICT215 Operate digital media technology packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, select and use a digital media package and supporting technologies to produce a variety of media rich documents.

It applies to individuals who work under supervision within a small to large office environment and have responsibility in completing designated tasks, using a range of practical skills and basic technical knowledge.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to operate a digital media package	1.1 Set up workstation according to work health and safety standards and organisational requirements 1.2 Identify requirements of design brief and user environment 1.3 Determine required digital media package 1.4 Determine required data set according to task requirements
2. Operate digital media package	2.1 Manipulate and adapt data according to task requirements 2.2 Incorporate graphics, moving images and sound according to task requirements 2.3 Name and save document in file and folder
3. Review digital media	3.1 Test digital media presentation incorporated graphics,

ELEMENT	PERFORMANCE CRITERIA
design	moving images and sound 3.2 Present digital media package to required personnel 3.3 Seek and respond to digital media package presentation feedback from required personnel 3.4 Review final product against design brief and obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	Adds and subtracts whole numbers, fractions and decimals in calculating time, audio output, graphic dimensions and file size
Oral communication	- Uses plain English, listening and questioning techniques - Presents information to audience using tone, grammar and syntax
Reading	- Interprets textual and diagrammatic information - Interprets systems related icons, text and diagrams
Writing	- Enters written and verbally received information and data into a format required by digital media package - Selects vocabulary, syntax, terminology, labelling and naming conventions in program and design requirements
Planning and organising	Plans routine tasks with goals and outcomes, taking some limited responsibility in decisions regarding sequencing
Self-management	- Takes personal responsibility in adhering to legal and regulatory requirements - Follows routine procedures in using digital technology and enters, stores and retrieves information directly applicable to own role
Technology	- Identifies and evaluates purposes, specific functions and key features of basic digital systems and tools - Operates basic digital systems and tools in completing routine tasks and adapting some functions

Unit Mapping Information

Supersedes and is equivalent to ICTICT204 Operate a digital media technology package.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTICT215 Operate digital media technology packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and define data set, incorporate data set into media technology package and present output on one occasion.

In the course of the above, the candidate must:

- interpret basic requirements of a design brief
- meet organisational requirements using digital media package
- apply workplace health and safety (WHS) principles and responsibilities
- use help manuals and online support.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles of visual design
- functions and features of digital media packages and technologies
- graphic design and stylistic language conventions
- WHS principles and responsibilities
- principles of digital imaging and file formats, video and sound file formats, file management and transfer systems
- vendor product directions in digital media hardware and software
- creative information, scripts (text) and images
- basic principles of legal and regulatory requirements that apply to operating digital media technology packages.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

- This includes access to:
- required industry standard hardware and software
- documents detailing organisational style guide and policy
- data required in developing software application documents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

MEM05004 Perform routine oxy fuel gas welding

Modification History

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Application

This unit of competency defines the skills and knowledge required to prepare materials and perform routine oxy fuel gas welding of mild/low carbon steel and cast iron where the welding is not required to meet an Australian Standard or equivalent.

Where welding is required to meet AS 1554 General Purpose or equivalent codes, work health and safety (WHS) regulations and/or licensing requirements MEM05055 Weld using oxy fuel gas welding process should also be selected.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	Prepare equipment for welding	2.1	Check condition of gas handling equipment
		2.2	Assemble and set up fuel gas welding equipment according to SOPs
		2.3	Determine and set gas pressures
		2.4	Select consumables
3	Prepare materials for welding	3.1	Identify location of welds in accordance with job specifications
		3.2	Clean and prepare materials ready for welding
4	Perform routine welding using oxy fuel gas	4.1	Weld materials to job requirements
		4.2	Clean welds according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fuel gases include one (1) or more of the following:

- acetylene
- liquefied petroleum gas (LPG)
- hydrogen

Materials include one (1) or more of the following:

- mild/low carbon steel
- cast iron

Consumables include one (1) or more of the following:

- filler rods
- fluxes

Welds include the following:

- butt
- fillet

Preparation includes one (1) or more of the following:

- preheating
- setting up jigs
- fixtures
- clamps
- joint preparation

Fuel gas welding equipment includes the following:

- gas cylinders
- hoses
- blowpipes
- tips and nozzles
- regulators
- flashback arrestors

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05004 Perform routine oxy fuel gas welding

Modification History

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- cleaning and preparing materials for welding
- setting up:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors
- selecting settings and consumables
- butt and fillet weld materials to comply with specifications
- cleaning welds according to SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- preparatory requirements
- equipment and equipment settings
- purpose of, and setting up requirements, of:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors

- fuel gas properties and applications
- weld characteristics.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing routine oxy fuel gas welding at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05005 Carry out mechanical cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05005B Carry out mechanical cutting

Application

This unit of competency defines the skills and knowledge required to set up and operate a range of mechanical cutting and holing equipment.

Typical applications of this unit include cutting for manufacture, production cutting and cutting materials in a maintenance environment.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of power tools for hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

Where operational maintenance of equipment is required unit MEM07001 Perform operational maintenance of machines/equipment should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
		1.5	Plan use of material to minimise waste
2	Select/set up machine tooling	2.1	Select appropriate method/machines to meet specifications
		2.2	Load machines and adjust for operation according to SOPs
		2.3	Select and install tooling to match job requirements
		2.4	Set up and adjust machines according to SOPs
3	Operate mechanical cutting machine	3.1	Set appropriate stops and guards and adjust as required
		3.2	Secure and position material as required
		3.3	Operate machine to cut/hole material to meet specifications
		3.4	Check material and adjust machine and/or tooling as required against specifications

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

3.5 Check material for conformance to specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Machines include one or (1) more of the following:

- guillotines
- croppers
- cold saws
- band saws
- automatic saws
- abrasive saws

Tooling includes one (1) or more of the following:

- guillotine blades
- cropper punches and dies
- cold saw blades
- band saw blades
- automatic saw blades

Materials include one (1) or more of the following:

- ferrous
- non-ferrous
- non-metallic products

Stops and guards include the following:

- all safety equipment/stops/guards

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05005B Carry out mechanical cutting

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05005 Carry out mechanical cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05005B Carry out mechanical cutting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting appropriate cutting machine and tooling and loading material to match job requirements
- setting up and safely operating equipment
- securing and positioning material using a graduated measuring device and adjusting as required in conformance with specifications
- adjusting machine/tooling as required using material in most economical way
- checking material against specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- characteristics of cutting methods and machines
- effect of materials on the machine tooling, tooling defects and adjustments
- effect of adjustments on the dimensions of the cut material
- applicable tolerances
- methods of marking out materials to ensure minimum wastage.

Assessment Conditions

- Assessors must:
 - have vocational competency in carrying out mechanical cutting at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05007 Perform manual heating and thermal cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Application

This unit of competency defines the skills and knowledge required to perform manual heating, thermal cutting and gouging including the assembly and disassembly and operation of the equipment on a range of materials.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Select and set up heating and thermal cutting equipment	2.1	Select cutting process and/or method appropriate for material
		2.2	Select and assemble appropriate accessories and equipment
		2.3	Ensure equipment is in safe working condition
		2.4	Set up equipment following SOPs
3	Perform heating and thermal cutting	3.1	Follow equipment start-up procedures and make adjustments as required
		3.2	Make appropriate cutting allowances
		3.3	Minimise wastage of materials when performing manual heating and thermal cutting
		3.4	Identify defects and take corrective action in accordance with SOPs
		3.5	Heat and cut material to specification
		3.6	Inspect shape/size/length of final product for compliance with specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Cutting includes one (1) or more of the following:

- hand held
- self-propelled straight line cutters

Methods include one (1) or more of the following:

- manual
- automatic

Fuel gases include one (1) or more of the following:

- acetylene
- liquefied petroleum gas (LPG)
- hydrogen

Material includes various thicknesses and types of one (1) or more of the following:

- ferrous
- non-ferrous
- non-metallic

Equipment includes the following:

- gas cylinders
- hoses
- blowpipes
- tips and nozzles
- regulators
- flashback arrestors

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05007 Perform manual heating and thermal cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting equipment appropriate to the material
- checking condition of equipment
- setting up:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors
- operating equipment to cut materials making appropriate cutting allowances to ensure material is used in most economical way
- identifying defects and taking appropriate remedial action
- heating material to specification
- checking final product for compliance with specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- cutting processes appropriate to various materials
- heating and cutting specifications
- purpose of, and setting up requirements, of:
 - gas cylinders
 - hoses
 - blowpipes

- tips and nozzles
- regulators
- flashback arrestors
- tools, equipment, techniques and procedures for heating and cutting
- potential equipment faults
- assembling procedures for equipment and accessories
- equipment pre-checks and operation
- procedures for adjusting heating and cutting equipment
- cutting allowances and reasons for applying them
- procedures and reasons for minimising waste material
- cutting defects and their causes and tools, equipment and techniques required to correct defects.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing manual heating and thermal cutting at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05011 Assemble fabricated components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05011 Assemble fabricated components (Release 1).

Release 1. Supersedes and is equivalent to MEM05011D Assemble fabricated components.

Application

This unit of competency has been developed for Engineering Tradesperson - Fabrication apprenticeship training and recognition of trade-level skills in the assembly of general fabricated components in plate, pipe and section or sheet in typical applications either on-site or in a fabrication workplace.

Skills covered by this unit are generally applied in occupational and work situations associated with steel fabrication, boilermaking or sheet metal work.

Work may be undertaken individually or as part of a team.

Where assembly involves using pre-constructed jigs unit MEM03001 Perform manual production assembly and unit MEM03003 Perform sheet and plate assembly, should also be selected as appropriate.

Where skills for the assembly of fabricated engineering components are required unit MEM18006 Perform precision fitting of engineering components should also be selected.

Where welds are required to meet legislative or regulatory requirements, then appropriate welding units should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 8

Pre-requisite Unit

MEM05005	Carry out mechanical cutting
MEM05007	Perform manual heating and thermal cutting
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Plus, one or more of the following, including their prerequisites:

MEM05015	Weld using manual metal arc welding process
MEM05017	Weld using gas metal arc welding process
MEM05019	Weld using gas tungsten arc welding process
MEM05055	Weld using oxy fuel gas welding process

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Identify assembly and distortion control methods	2.1	Identify appropriate assembly and distortion control methods
		2.2	Construct jigs from engineering drawings or according to workshop practice, where required
3	Ensure all components, tools and fixtures for fabrication assembly are available	3.1	Select most appropriate equipment for assembly tasks
		3.2	Check and assemble all components against drawings and material list
4	Assemble fabricated components	4.1	Position material and/or fabricated components and adjust structural alignment and levelling
		4.2	Determine datum line where necessary
		4.3	Apply appropriate distortion prevention/control techniques
		4.4	Check assembled components for position including squareness, level and alignment to specification
		4.5	Apply fixing/joining techniques according to SOPs
		4.6	Check final assembly for compliance with specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Distortion prevention/control techniques includes one (1) or more of the following:

- jigs
- fixtures
- heat
- clamps

Typical applications include one (1) or more of the following:

- transitions
- pipe works
- structural fabrication
- ductwork
- general jobbing work
- fired and unfired pressure vessels

Components include one (1) or more of the following:

- general fabricated components in either:
 - plate
 - pipe and section
 - sheet

Structural alignment and levelling includes one (1) or more of the following:

- using planes and line straight edges
- spirit levels
- line levels
- squares

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fixing/joining techniques include one (1) or more of the following:

- welding
- adhesives
- fasteners
- rivets

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05011 Assemble fabricated components (Release 1).

Release 1. Supersedes and is equivalent to MEM05011D Assemble fabricated components.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05011 Assemble fabricated components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05011 Assemble fabricated components (Release 1).

Release 1. Supersedes and is equivalent to MEM05011D Assemble fabricated components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- constructing necessary jigs
- planning fabricated component assembly tasks and sequences efficiently and effectively
- aligning material in jigs and using fixtures, tools and equipment as necessary to check the position of all assembled components visually and dimensionally
- marking datum lines in an appropriate manner
- positioning and assembling general fabricated components in accordance with drawing/specifications using accepted engineering trade techniques, practices, processes and workplace procedures either on-site or in a fabrication workshop
- applying appropriate distortion control techniques and checking to ensure compliance of the final assembly with specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- methods and techniques for assembly of fabricated components
- jig construction
- effects of distortion of fabricated components and distortion prevention techniques
- uses and interpretation of drawings, specifications and material lists
- characteristics of relevant tools and equipment for determining squareness, level and alignment
- function and determination of datum lines
- fixing/joining techniques, including:
 - welding
 - adhesives

- fasteners
- rivets
- defects associated with the assembly of fabricated components and methods of rectification of defects by rework or adjustment.

Assessment Conditions

- Assessors must:
 - have vocational competency in assembling fabricated components at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05012 Perform routine manual metal arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05012C Perform routine manual metal arc welding

Application

This unit of competency defines the skills and knowledge required to carry out routine manual metal arc welding (MMAW) of low carbon mild steel where the welding is not required to meet an Australian Standard or equivalent.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Prepare materials and equipment for welding	2.1	Identify location of welds in accordance with procedures and job specifications
		2.2	Clean and prepare materials ready for welding
		2.3	Set up welding equipment according to SOPs
		2.4	Select correct electrodes and adjust settings to suit application
3	Perform routine welding using MMAW	3.1	Weld materials to job requirements
		3.2	Clean welds according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- butt
- fillet

Preparing includes one (1) or more of the following:

- cleaning
- setting up jigs
- fixtures
- clamps
- joint preparation

Welding equipment includes the following:

- welding leads
- welding machines
- electrode holder

Cleaning includes one (1) or more of the following:

- slag and spatter
- cleaning
- using files
- grinders

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05012C Perform routine manual metal arc welding

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05012 Perform routine manual metal arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05012C Perform routine manual metal arc welding

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing routine manual metal arc welding (MMAW)
- cleaning and preparing materials to specifications
- setting up welding equipment, selecting appropriate electrodes and adjusting settings to suit application
- welding materials to comply with specifications
- cleaning welds for slag and splatter in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- material and equipment preparation
- equipment set-up and settings
- appropriate welding consumables consistent with standard operating procedures
- MMAW processes and properties.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing routine manual metal arc welding at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05015 Weld using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05015 Weld using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05015D Weld using manual metal arc welding process.

Application

This unit of competency has been developed for Engineering Tradesperson – Fabrication apprenticeship training and the recognition of trade-level skills in manual metal arc welding (MMAW) on heavy or light metal fabrications. It may also apply to other trade occupations requiring higher level MMAW welding skills.

Weld quality would typically conform to AS 1554 General Purpose, and American Bureau of Shipping (ABS) or equivalent.

Where manual thermal processes associated with preparation, pre-heat and/or post-heat is required unit MEM05007 Perform manual heating and thermal cutting and unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05012	Perform routine manual metal arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for MMAW	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble and set up	3.1	Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	welding equipment and consumables	3.2	Assemble and set up AC or DC welding equipment
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld to job specification using MMAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Inspect weld joints visually for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the

- fillet and butt welds carried out in all positions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

following:

Materials include one (1) or more of the following:

- ferrous, including carbon or stainless steel
- non-ferrous metals
- alloys suitable for MMAW welding

Preparation of materials includes one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps
- joint preparation (e.g. bevelling)

Distortion prevention measures include one (1) or more of the following:

- preheating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05015 Weld using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05015D Weld using manual metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05015 Weld using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05015 Weld using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05015D Weld using manual metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for welding using manual metal arc welding process (MMAW) to the specified standard
- selecting appropriate weld and joint preparation methods
- consistently weld a range of materials to the specified standard or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing weld records related to MMAW onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- material preparation for MMAW
- weld joint preparations
- welding electrode classification
- causes of distortion for materials when welded
- causes of weld defects and methods of rectification
- relationships between amperage, electrode and material
- standards for MMAW, including AS 1554 General Purpose any other equivalent standards.

Assessment Conditions

- Assessors must:

- have vocational competency in welding using MMAW process at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05016 Perform advanced welding using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05016 Perform advanced welding using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05016C Perform advanced welding using manual metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to carry out advanced welding using manual metal arc welding (MMAW).

Welds are associated with a range of structural sections and/or plate and/or pipe for general fabrication. Weld quality would typically conform to AS 1554 Structural Purpose or equivalent.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05012	Perform routine manual metal arc welding
MEM05015	Weld using manual metal arc welding process
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for welding	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble	3.1	Identify and select welding equipment and electrodes,

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	and set up welding equipment and consumables		accessories and consumables appropriate to the material
		3.2	Assemble and set up AC or DC welding equipment
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld joints to specifications using MMAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Inspect weld joints visually for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- fillet and butt welds carried out in all positions

Materials include one (1) or more of the following:

- low carbon, stainless and low alloy steel

Preparation includes one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures, clamps
- joint preparation e.g. bevelling

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05016 Perform advanced welding using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05016C Perform advanced welding using manual metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05016 Perform advanced welding using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05016 Perform advanced welding using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05016C Perform advanced welding using manual metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing advanced welding using manual metal arc welding process (MMAW) to Australian Standard 1554 Structural Purpose
- selecting appropriate weld and joint preparation methods
- consistently weld materials to AS 1554 Structural Purpose or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing and maintaining weld records related to MMAW Structural Purpose onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- properties and characteristics of low carbon, stainless and low alloy steel
- requirements to conform to AS 1554 Structural Purpose or equivalent
- weld specifications and requirements
- different welder identification systems, including numbering, bar coding, paint coding and letter stamps.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced welding using MMAW process at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05017 Weld using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05017 Weld using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05017D Weld using gas metal arc welding process.

Application

This unit of competency has been developed for Engineering Tradesperson - Fabrication apprenticeship training and the recognition of trade-level skills in gas metal arc welding (GMAW) on heavy or light metal fabrications. It may also apply to other trade occupations requiring higher level GMAW welding skills.

Weld quality would typically conform to Australian Standard 1554 General Purpose, and American Bureau of Shipping (ABS) or equivalent.

Where manual thermal processes associated with preparation, pre-heat and/or post-heat is required unit MEM05007 Perform manual heating and thermal cutting and unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05050	Perform routine gas metal arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for GMAW	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification where required
3	Select, assemble and set up	3.1	Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	welding equipment and consumables	3.2	Assemble and set up AC or DC welding equipment
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld to job specification using GMAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Visually inspect weld joints for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the

- fillet and butt welds carried out in all positions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

following:

Materials include one (1) or more of the following:

- ferrous, including carbon or stainless steel
- non-ferrous metals
- alloys suitable for GMAW

Preparation includes one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps
- joint preparation (e.g. bevelling)

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05017 Weld using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05017D Weld using gas metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05017 Weld using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05017 Weld using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05017D Weld using gas metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for welding using gas metal arc welding process (GMAW) to the specified standard
- selecting appropriate weld and joint preparation methods
- consistently weld materials to the specified standard or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing weld records related to GMAW onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- types of gases and their uses
- relationships between amperage/wire feed, voltage, gas flow, electrode and material
- application of weld metal transfer (short arc and spray)
- correct welding machine, leads, hand pieces and electrodes
- material preparation
- weld joint preparations
- filler wire classification
- causes of distortion for materials when welded
- causes of weld defects and methods of rectification
- standards for GMA welding, including Australian Standard 1554 General Purpose and any other equivalent standards.

Assessment Conditions

- Assessors must:
 - have vocational competency in welding using GMAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05018 Perform advanced welding using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05018 Perform advanced welding using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05018C Perform advanced welding using gas metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to carry out advanced welding using gas metal arc welding (GMAW).

Welds are associated with a range of structural sections and/or plate and/or pipe for general fabrication using ferrous and non-ferrous materials. Weld quality would typically conform to AS 1554 Structural Purpose or equivalent.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05017	Weld using gas metal arc welding process
MEM05050	Perform routine gas metal arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for welding	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble	3.1	Identify and select welding equipment and electrodes,

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	and set up welding equipment and consumables		accessories and consumables appropriate to the material
		3.2	Assemble and set up AC or DC welding equipment
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld joints to specifications using GMAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Inspect weld joints visually for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the

- fillet and butt weld carried out in all positions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

following:

Materials include one (1) or more of the following:

- low carbon
- cast iron
- stainless and low alloy steel
- aluminium and aluminium alloys

Preparation includes one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures, clamps
- joint preparation e.g. bevelling

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures, clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05018 Perform advanced welding using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05018C Perform advanced welding using gas metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05018 Perform advanced welding using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05018 Perform advanced welding using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05018C Perform advanced welding using gas metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing advanced welding using gas metal arc welding (GMAW) process to AS 1554 Structural Purpose
- selecting appropriate weld and joint preparation methods
- consistently weld materials to AS 1554 Structural Purpose or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing and maintaining weld records related to GMAW Structural Purpose onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- in-depth knowledge of the properties and characteristics of a wide range of materials
- requirements to conform to AS 1554 Structural Purpose or equivalent
- weld procedures and requirements
- different welder identification systems, including numbering, bar coding, paint coding and letter stamps
- causes of weld defects and methods of rectification.

Assessment Conditions

- Assessors must:

- have vocational competency in performing advanced welding using GMAW process at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05019 Weld using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05019 Weld using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05019D Weld using gas tungsten arc welding process.

Application

This unit of competency has been developed for Engineering Tradesperson - Fabrication apprenticeship training and the recognition of trade-level skills in gas tungsten arc welding (GTAW) on heavy or light metal fabrications. It may also apply to other trade occupations requiring higher level GTAW welding skills.

Weld quality would typically conform to AS 1554 General Purpose and American Bureau of Shipping (ABS), or equivalent.

Where manual thermal processes associated with preparation, pre-heat and/or post-heat is required unit MEM05007 Perform manual heating and thermal cutting and unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05049	Perform routine gas tungsten arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for GTAW	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble and set up	3.1	Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	welding equipment and consumables	3.2	Assemble and set up AC or DC welding equipment
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld to job specification using GTAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Visually inspect weld joints for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the

- fillet and butt welds carried out in all positions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

following:

Materials include one (1) or more of the following:

- ferrous, including carbon steel or stainless steel
- non-ferrous metals
- aluminium and other materials suitable for GTAW welding

Preparation includes one (1) or more of the following:

- pre-heating
- setting up of jigs, fixtures and clamps
- joint preparation (e.g. bevelling)

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05019 Weld using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05019D Weld using gas tungsten arc welding process.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05019 Weld using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05019 Weld using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05019D Weld using gas tungsten arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for welding using gas tungsten arc welding process (GTAW) to the specified standard
- selecting appropriate weld and joint preparation methods
- consistently weld materials to the specified standard using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing weld records related to GTAW onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- correct welding machine, leads, hand pieces and electrodes
- material preparation
- joint preparations
- electrode classification
- causes of distortion for materials when welded
- causes of defects and methods of rectification
- relationships between amperage, electrode and material
- types of gases and their uses
- types of electrodes, current settings and high frequency voltage
- filler materials and consumables
- standards for GTAW welding, AS 1554 General Purpose and other equivalent standards.

Assessment Conditions

- Assessors must:
 - have vocational competency in welding using GTAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05020 Perform advanced welding using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05020 Perform advanced welding using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05020C Perform advanced welding using gas tungsten arc welding process.

Application

This unit of competency defines the skills and knowledge required to carry out advanced welding using gas tungsten arc welding (GTAW).

Welds are associated with a range of structural sections and/or plate and/or pipe for general fabrication. Weld quality would typically conform to AS 1554 Structural Purpose or equivalent.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05019	Weld using gas tungsten arc welding process
MEM05049	Perform routine gas tungsten arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements

MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for welding	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble and set up welding equipment and consumables	3.1	Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material
		3.2	Assemble and set up AC or DC welding equipment

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld joints to specifications using GTAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Inspect weld joints visually for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- fillet and butt welds carried out in all positions

Materials include one (1)

- low carbon
- cast iron

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

or more of the following:

- stainless and low alloy steel
- aluminium

Preparation includes one (1) or more of the following:

- pre-heating
- setting up of jigs, fixtures and clamps
- joint preparation (e.g. bevelling)

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

Defects include one (1) or more of the following:

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05020 Perform advanced welding using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05020C Perform advanced welding using gas tungsten arc welding process.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05020 Perform advanced welding using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05020 Perform advanced welding using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05020C Perform advanced welding using gas tungsten arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing advanced welding using gas tungsten arc welding process (GTAW) to AS 1554 Structural Purpose
- selecting appropriate weld and joint preparation methods
- consistently weld materials to AS 1554 Structural Purpose or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing and maintaining weld records related to GTAW Structural Purpose onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- in-depth knowledge of the properties and characteristics of a wide range of materials
- requirements to conform to AS 1554 Structural Purpose or equivalent
- weld procedures and requirements
- different welder identification systems, including numbering, bar coding, paint coding, and letter stamps.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced welding using GTAW process at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05022 Perform advanced welding using oxy acetylene welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05022 Perform advanced welding using oxy acetylene welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05022C Perform advanced welding using oxy acetylene welding process.

Application

This unit of competency defines the skills and knowledge required to perform advanced oxy acetylene welding using a range of materials for general fabrication.

Welding quality would meet AS 1554 Special Purpose or equivalent.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM05004	Perform routine oxy fuel gas welding
MEM05007	Perform manual heating and thermal cutting
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM05055	Weld using oxy fuel gas welding process
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare materials for welding	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble and set up	3.1	Identify and select welding equipment and consumables according to job requirements

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	welding equipment and consumables	3.2	Assemble and set up welding equipment in accordance with SOPs
4	Weld joints to Australian Standard 1554 SP or equivalent	4.1	Weld materials to AS 1554 Structural Purpose or equivalent in all positions
		4.2	Interpret instructions, symbols and specifications, including bead size, bead placement and reinforcement in accordance with weld procedure sheet, if available, and SOPs
5	Ensure weld conformance	5.1	Inspect weld joints visually for conformance to specifications
		5.2	Remove defects with minimum loss of sound metal using correct and appropriate techniques and tools
		5.3	Complete weld records, where required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- fillet and butt in the horizontal, vertical and overhead positions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Materials include one (1) or more of the following:

- low carbon steel, plate, pipe, tube and round bar

Fuel gases include one (1) or more of the following:

- acetylene
- liquefied petroleum gas (LPG)
- hydrogen

Equipment includes the following:

- cylinders
- regulators
- hoses
- torches
- tips
- flash back arrestors

Consumables include the following:

- appropriate fuel gas
- filler rods
- fluxes

Preparing materials includes one (1) or more of the following:

- pre-heating
- setting up of jigs, fixtures and clamps
- joint preparation e.g. bevelling

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05022 Perform advanced welding using oxy acetylene welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05022C Perform advanced welding using oxy acetylene welding process.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05022 Perform advanced welding using oxy acetylene welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05022 Perform advanced welding using oxy acetylene welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05022C Perform advanced welding using oxy acetylene welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing advanced welding using oxy acetylene welding process to AS 1554 Special Purpose or equivalent
- selecting appropriate weld and joint preparation methods
- consistently weld materials in all positions, including fillet and butt in the horizontal, vertical and overhead positions to the specified standard or equivalent while preventing distortion
- rectifying any defects
- completing and maintaining weld records related to oxy acetylene welding Special Purpose onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- preparatory requirements
- purpose and examples of pre-welding and post-welding heating of the weld materials
- appropriate settings for the given task and the selected equipment/consumables
- purpose of reinforcing areas to be welded
- methods of weld defect removal and their application
- material and consumable properties and characteristics
- requirements of AS 1554 Special Purpose or equivalent
- fuel gas properties and applications
- post treatments

- recording procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced welding using oxy acetylene welding process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05024 Perform welding supervision

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05024 Perform welding supervision (Release 1).

Release 1. Supersedes and is equivalent to MEM05024B Perform welding supervision.

Application

This unit of competency has been developed for post trade training of advanced engineering fabrication trades people and the recognition of post trade skills instructing and qualifying welders in accordance with weld procedures.

It defines the skills and knowledge required to instruct and qualify welders in accordance with weld procedures, including maintaining quality and safety procedures.

Competencies in this unit are based on wide knowledge of welding science, processes, procedures and technical requirements. Individuals working in this field would hold at least one certificate satisfying the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificate 1-9.

The supervision, training and qualification of welders in welding procedures are defined by recognised codes and standards e.g. AS 2214-2004 (R2016) Certification of welding supervisors - Structural steel welding and AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificate 10.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 12

Pre-requisite Unit

MEM05026	Apply welding principles
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Determine and prepare welding procedure	2.1	Instruct welders according to SOPs
		2.2	Determine welding parameters in accordance with weld procedures
		2.3	Plan variables and sequence checks against documentation
		2.4	Prepare documentation for record keeping
3	Qualify welders	3.1	Train welders in relevant weld procedures

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	to required procedures	3.2	Test welders against relevant weld procedures
		3.3	Maintain welder performance reports against weld procedures
4	Monitor/ maintain quality assurance and safety procedures	4.1	Monitor internal quality assurance plan
		4.2	Ensure traceability of materials
		4.3	Ensure welding is supervised to compliance with prescribed specifications and/or documented procedures and/or safety procedures
5	Prepare documents	5.1	Record procedure against pre-qualifying procedures
		5.2	Record findings on internal quality assurance plan
6	Arrange for non-destructive testing and destructive testing	6.1	Arrange weld tests appropriate to the weld procedure
		6.2	Verify non-destructive testing/destructive testing reports against job requirements and specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

No range of conditions provided for this unit.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05024 Perform welding supervision (Release 1).

Release 1. Supersedes and is equivalent to MEM05024B Perform welding supervision.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05024 Perform welding supervision

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05024 Perform welding supervision (Release 1).

Release 1. Supersedes and is equivalent to MEM05024B Perform welding supervision.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- instructing welders and determining welding parameters in accordance with procedures
- qualifying welders by training and testing against relevant procedures
- monitoring internal quality assurance plan and safety procedures ensuring materials can be traced to their source
- recording weld procedure and findings on internal quality assurance plan
- arranging for non-destructive/destructive testing appropriate to weld procedure and verifying results against specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- welding science, principles and effects of heat treatment
- welding terms, codes and symbols
- welding processes, parameters and relation to weld quality
- welding procedures defined by code and technical requirements
- non-destructive testing.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing welding supervision at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05026 Apply welding principles

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05026 Apply welding principles (Release 1).

Release 1. Supersedes and is equivalent to MEM05026C Apply welding principles.

Application

This unit of competency has been developed for post-trade training of advanced engineering tradespeople and the recognition of post-trade skills in applying welding principles to meet the statutory and regulatory requirements for welding procedures generally associated with the application of one of the units satisfying AS 1796-2001 (R2016) *Certification of welders and welding supervisors*, Certificates 1-9.

This unit covers the underpinning knowledge required to satisfy AS 1796-2001 (R2016) *Certification of welders and welding supervisors* and includes knowledge of welding terms, codes and symbols, the effects of heat treatment on metal as it relates to welding, and the logical sequence for a welding process required to be conducted to AS 1796-2001 (R2016) *Certification of welders and welding supervisors*. It covers welding, planning and set up principles for a range of materials and processes.

This unit must be assessed in combination with one of the units satisfying the AS 1796-2001 (R2016) *Certification of welders and welding supervisors*, Certificates 1-9. These units include:

- MEM05042 Perform welds to code standards using flux core arc welding process
- MEM05043 Perform welds to code standards using gas metal arc welding process
- MEM05044 Perform welds to code standards using gas tungsten arc welding process
- MEM05045 Perform pipe welds to code standards using manual metal arc welding process
- MEM05046 Perform welds to code standards using manual metal arc welding process
- MEM05058 Perform welds to code standards using oxy fuel gas welding process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
		1.5	Interpret welding terms and symbols correctly
2	Determine the effects of heat treatment on metal in relation to welding	2.1	Identify reasons for performing heat treatment
		2.2	Apply processes, including pre-heat/post-heat treatment, stress relieving, normalising and annealing, where appropriate

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

3 Plan the logical sequence of welding operations	3.1 Apply statutory and safety requirements to welding 3.2 Apply principles of planning and setting up welding 3.3 Prepare welds for testing, where specified

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Statutory and safety requirements include:	• as required by AS 1796-2001 (R2016) Certification of welders and welding supervisors, welding codes
Welding is to AS 1796-2001 (R2016) Certification of welders and welding supervisors and includes one (1) or more of the following:	• flux core arc welding (FCAW) • gas metal arc welding (GMAW) • gas tungsten arc welding (GTAW) • manual metal arc welding (MMAW) • oxy fuel gas welding

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05026 Apply welding principles (Release 1).

Release 1. Supersedes and is equivalent to MEM05026C Apply welding principles.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05026 Apply welding principles

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05026 Apply welding principles (Release 1).

Release 1. Supersedes and is equivalent to MEM05026C Apply welding principles.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- interpreting and applying statutory and safety requirements, including welding terms, codes and symbols as required by AS 1796-2001 (R2016) *Certification of welders and welding supervisors*, and welding codes for welding processes
- applying appropriate pre- and post-heat treatment processes for a range of welded materials
- setting up weld sequence and preparing materials in a logical manner for welding job.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- welding terminology, including codes and symbols
- heat treatment processes and the effect of heat treatment on metal
- logical sequence for welding processes
- tools, equipment and techniques used in welding.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying welding principles at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.

- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05036 Repair, replace and/or modify fabrications

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05036 Repair, replace and/or modify fabrications (Release 1).

Release 1. Supersedes and is equivalent to MEM05036C Repair/replace/modify fabrications.

Application

This unit of competency defines the skills and knowledge required to undertake repair, replacement and/or modifications of fabrications requiring an integrated level of skills in fabrication maintenance and repair and is intended to build on skills covered by the specialist prerequisites.

Where machines and equipment for forming, bending or shaping are required unit MEM05010 Apply fabrication, forming and shaping techniques should also be selected.

Where additional or more complex marking out skills are required see MEM12007 Mark off/out structural fabrications and shapes should also be selected.

Where the selection and use of welding processes are required appropriate units should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM05005	Carry out mechanical cutting
MEM05007	Perform manual heating and thermal cutting
MEM05011	Assemble fabricated components
MEM05051	Select welding processes

MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Plus, one or more of the following, including their prerequisites:

MEM05015	Weld using manual metal arc welding process
MEM05017	Weld using gas metal arc welding process
MEM05019	Weld using gas tungsten arc welding process
MEM05047	Weld using flux core arc welding process
MEM05055	Weld using oxy fuel gas welding process

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
		1.5	Inspect fabrication and determine suitability for repair/replacement/modification
2	Assess and process material requirements	2.1	Assess material requirements in accordance with relevant codes, manufacturers' specifications and SOPs
		2.2	Obtain/requisition materials
		2.3	Assess and obtain tool and equipment requirements in accordance with SOPs
3	Prepare materials	3.1	Prepare fabrication for repair/replacement and/or modification to specification using acceptable workplace practices, tools and equipment
		3.2	Mark out and prepare to specifications with minimum wastage using appropriate principles, tools and equipment
		3.3	Ensure materials are cut, bent, rolled, shaped or formed to specifications using appropriate fabrication techniques/procedures, tools and equipment
		3.4	Mark items for identification, where required
4	Repair, replace and/or modify fabrication	4.1	Position/clamp materials for welding using suitable clamping methods, equipment, jigs and fixtures
		4.2	Undertake pre-tack checks and determine compliance with specifications prior to tack welding in position
		4.3	Prepare welding equipment and adjust settings according to requirements
		4.4	Tack weld material or item using appropriate distortion

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

minimisation techniques and procedures

4.5 Check material or item against specifications prior to welding

4.6 Weld material or item to specifications using techniques and procedures appropriate to job requirements

5 **Finish and inspect repair, replacements and/or modification**

5.1 Ensure repair, replacement and/or modification is cleaned and finished to specifications using appropriate workplace practices

5.2 Inspect welds visually to assess weld quality against predetermined specifications

5.3 Assess completed repair and/or replacement for compliance against specifications

5.4 Prepare and lodge maintenance report according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fabrication inspection includes one (1) or more of the following:

- determine defects/faults
- non-compliance with specifications
- repair/replacement/modification

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Marked for identification includes one (1) or more of the following:

- to undergo repair, replacement and/or modification
- to be cut, bent, rolled, shaped or formed to specifications

Clamping methods include one (1) or more of the following:

- automatic
- semi-automatic
- manual methods

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05036 Repair, replace and/or modify fabrications (Release 1).

Release 1. Supersedes and is equivalent to MEM05036C Repair/replace/modify fabrications.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05036 Repair, replace and/or modify fabrications

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05036 Repair, replace and/or modify fabrications (Release 1).

Release 1. Supersedes and is equivalent to MEM05036C Repair/replace/modify fabrications.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions and inspecting fabrication for defects/faults, non-compliance and determining suitability for repair/replacement/modification
- selecting material, marking out and safely cutting, bending, rolling, shaping or forming ensuring minimum wastage using correct principles, tools, equipment and procedures
- selecting appropriate welding equipment and preparing materials for welding, including pre-tack checks and set up jigs, fixtures and clamps
- consistently welding materials while preventing distortion and rectifying any defects and ensuring repair, replacement and/or modification is cleaned and finished and visually inspected to meet predetermined specifications
- completing and lodging maintenance report.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- characteristics of faults, defects and/or non-compliance and means of rectification by rework or additional work, or by replacement of components/materials
- effects of proposed modifications on the fabrication
- reasons for selection of specific materials, tools, equipment and consumables
- marking out principles and techniques
- material preparation processes
- clamping method(s) for the welds undertaken
- location of all materials to be welded
- weld specifications

- equipment, consumables and settings required to achieve the weld specification
- distortion minimisation procedures and methods for rectifying any distortion of materials
- material cleaning and finishing processes for the repair/replacement/modification
- reporting requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in repairing, replacing and modifying fabrications at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05043 Perform welds to code standards using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05043 Perform welds to code standards using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05043B Perform welds to code standards using gas metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to prepare and produce welds to code standards using gas metal arc welding (GMAW) on a range of materials.

Butt and fillet welds in the flat, horizontal, vertical and overhead positions would be applied to meet AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Engineers (ASME) IX or equivalent.

This unit, in conjunction with Unit MEM05026 Apply welding principles, may satisfy the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors Certificate 8G.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05017	Weld using gas metal arc welding process
MEM05018	Perform advanced welding using gas metal arc welding process
MEM05026	Apply welding principles
MEM05050	Perform routine gas metal arc welding

MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare welding	2.1	Prepare materials to produce weld to code standard

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	materials and equipment for GMAW welding to code standard	2.2	Perform routine maintenance on welding equipment
		2.3	Set up welding equipment
3	Weld joints using GMAW to procedure specifications	3.1	Weld materials in accordance with weld procedure specification
		3.2	Rectify discontinuities to ensure compliance to code requirements
		3.3	Maintain weld records according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Routine maintenance includes the following:

- ensuring gun, liner and contact tip are in good condition

Preparation includes one (1) or more of the following:

- flame cut and ground or machined
- pre-heating
- setting up of jigs, fixtures and clamps

Materials include one (1) or more of the following:

- carbon/manganese steel on plate, pipe and rolled sections
- low alloy steel on plate, pipe and rolled steel sections
- aluminium on plate, pipe and rolled sections

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05043 Perform welds to code standards using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05043B Perform welds to code standards using gas metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05043 Perform welds to code standards using gas metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05043 Perform welds to code standards using gas metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05043B Perform welds to code standards using gas metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing welds using gas metal arc welding (GMAW) to code standards
- cleaning and preparing materials to specifications
- setting up welding equipment, including performing routine maintenance
- consistently weld materials to specifications
- rectifying any discontinuities
- completing and maintaining weld records related to GMAW to code standards onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- requirements to produce welds to quality of AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent
- relevant standards or codes
- methods for preparing plate and pipe for code standard welding
- pre-welding and post-welding heating methods and requirements for plate and pipe welding to code standard
- requirements for maintaining weld records to code standard.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing welds to code standards using gas metal arc welding process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05044 Perform welds to code standards using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05044 Perform welds to code standards using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05044B Perform welds to code standards using gas tungsten arc welding process.

Application

This unit of competency defines the skills and knowledge required to prepare and produce welds to code standards using gas tungsten arc welding (GTAW) on a range of materials.

Butt and fillet welds in the flat, horizontal, vertical and overhead positions would be applied to meet AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent. The unit, together with unit MEM05026 Apply welding principles, may satisfy the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificate 7.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05019	Weld using gas tungsten arc welding process
MEM05020	Perform advanced welding using gas tungsten arc welding process
MEM05026	Apply welding principles

MEM05049	Perform routine gas tungsten arc welding
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
2	Prepare welding materials and equipment for GTAW welding to code standard	2.1	Prepare materials to produce weld to code standard
		2.2	Perform routine maintenance on welding equipment
		2.3	Set up welding equipment
3	Weld joints using GTAW to procedure specifications	3.1	Weld materials in accordance with weld procedure specification
		3.2	Rectify discontinuities to ensure compliance to code requirements
		3.3	Maintain weld records according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Routine maintenance includes the following:

- ensuring hand piece, gas shroud and flow meter are in good condition

Preparation includes one (1) or more of the following:

- flame cut and ground or machined
- preheating
- setting up of jigs, fixtures and clamps

Materials include one (1)

- carbon/manganese steel on plate, pipe and rolled sections

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

or more of the following:

- low alloy steel on plate, pipe and rolled steel sections
- aluminium on plate, pipe and rolled sections

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05044 Perform welds to code standards using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05044B Perform welds to code standards using gas tungsten arc welding process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05044 Perform welds to code standards using gas tungsten arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05044 Perform welds to code standards using gas tungsten arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05044B Perform welds to code standards using gas tungsten arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing welds using gas tungsten arc welding (GTAW) to code standards
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including performing routine maintenance
- consistently weld materials to specifications
- rectifying any discontinuities
- completing and maintaining weld records related to GTAW to code standards onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- requirements to produce welds to quality of AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) or equivalent
- relevant standards or codes
- methods for preparing plate and pipe for code standard welding
- pre-welding and post-welding heating methods and requirements for plate and pipe welding to code standard
- requirements for maintaining weld records to code standard.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing welds to code standards using gas tungsten arc welding process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05045 Perform pipe welds to code standards using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05045 Perform pipe welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05045B Perform pipe welds to code standards using manual metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to prepare and produce pipe welds to code standards using manual metal arc welding (MMAW) on a range of materials.

Butt welds in pipe with the axis horizontal, vertical and/or askew would be applied to meet AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent. The unit, together with unit MEM05026 Apply welding principles, may satisfy the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificates 2 and 4.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05012	Perform routine manual metal arc welding
MEM05015	Weld using manual metal arc welding process
MEM05016	Perform advanced welding using manual metal arc welding

	process
MEM05026	Apply welding principles
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
2	Prepare welding materials and equipment for MMAW pipe welding to code standards	2.1	Prepare materials to produce pipe weld to code standard
		2.2	Perform routine maintenance on welding equipment
		2.3	Set up welding equipment
3	Weld pipe using MMAW to procedure specifications	3.1	Weld materials in accordance with weld procedure specification
		3.2	Rectify discontinuities to ensure compliance to code requirements
		3.3	Maintain weld records according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Routine maintenance includes the following:

- ensuring leads and hand pieces are in good condition and the correct current carrying capacity

Preparation includes one (1) or more of the following:

- flame cut and ground or machined
- pre-heating
- setting up of jigs, fixtures and clamps

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Materials include one (1) or more of the following:

- carbon/manganese steel
- stainless steel
- low alloy steel

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05045 Perform pipe welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05045B Perform pipe welds to code standards using manual metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05045 Perform pipe welds to code standards using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05045 Perform pipe welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05045B Perform pipe welds to code standards using manual metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing pipes welds using manual metal arc welding (MMAW) to code standards
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including performing routine maintenance
- consistently weld materials to specifications
- rectifying any discontinuities
- completing and maintaining weld records related to MMAW to code standards onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- requirements to produce welds to quality of AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent
- relevant standards or codes
- methods for preparing pipe for code standard welding
- pre-welding and post-welding heating methods and requirements for pipe welding to code standard
- requirements for maintaining weld records to code standard.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing pipe welds to code standards using MMAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05046 Perform welds to code standards using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05046 Perform welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05046B Perform welds to code standards using manual metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to prepare and produce welds to code standards using manual metal arc welding (MMAW) on a range of materials.

Butt and fillet welds in the flat, horizontal, vertical and overhead positions would be applied to meet AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent. This unit, together with unit MEM05026 Apply welding principles, may satisfy the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificates 1, 1E, 3 and 3E.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05012	Perform routine manual metal arc welding
MEM05015	Weld using manual metal arc welding process
MEM05016	Perform advanced welding using manual metal arc welding

	process
MEM05026	Apply welding principles
MEM05051	Select welding processes
MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
2	Prepare welding materials and equipment for MMAW welding to code standard	2.1	Prepare materials to produce weld to code standard
		2.2	Perform routine maintenance on welding equipment
		2.3	Set up welding equipment
3	Weld joints using MMAW to procedure specifications	3.1	Weld materials in accordance with weld procedure specification
		3.2	Rectify discontinuities to ensure compliance to code requirements
		3.3	Maintain weld records according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Routine maintenance includes the following:

- ensuring leads and hand pieces are in good condition and the correct current carrying capacity

Preparation includes one (1) or more of the following:

- flame cut and ground or machined
- preheating
- setting up of jigs, fixtures and clamps

Materials include one (1)

- carbon/manganese steel

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

or more of the following:

- stainless steel
- low alloy steel

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05046 Perform welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05046B Perform welds to code standards using manual metal arc welding process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05046 Perform welds to code standards using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05046 Perform welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05046B Perform welds to code standards using manual metal arc welding process.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing welds using manual metal arc welding (MMAW) to code standards
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including performing routine maintenance
- consistently weld materials to specifications
- rectifying any discontinuities
- completing and maintaining weld records related to MMAW to code standards onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- requirements to produce welds to quality of AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent
- relevant standards or codes
- methods for preparing plate for code standard welding
- pre-welding and post-welding heating methods and requirements for plate welding to code standard
- requirements for maintaining weld records to code standard.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing welds to code standards using MMAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05049 Perform routine gas tungsten arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05049B Perform routine gas tungsten arc welding

Application

This unit of competency defines the skills and knowledge required to prepare the materials and carry out routine gas tungsten arc welding (GTAW) and applies in a maintenance or manufacturing environment where the weld quality is not required to meet an Australian Standard.

Where welding is required to meet AS 1554 General Purpose or equivalent codes, work health and safety (WHS) regulations and/or licensing requirements Unit MEM05019 Weld using gas tungsten arc welding process should also be selected.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	Prepare materials and equipment for welding	2.1	Identify location of welds in accordance with procedures and job specifications
		2.2	Clean and prepare materials ready for welding
		2.3	Set up welding equipment to meet work requirement
		2.4	Select settings and consumables to suit application
3	Perform routine welding using GTAW	3.1	Weld materials to job requirements
		3.2	Clean welds according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- butt
- fillet

Materials include one (1) or more of the following:

- low carbon/mild steels
- aluminium

Prepared includes one (1) or more of the following:

- pre-heating
- setting up jigs
- fixtures
- clamps
- joint preparation

Welding equipment includes the following:

- hoses
- welding leads and gas shrouds
- electrodes
- gas regulator
- liners
- contact tips

Consumables include the following:

- tungsten electrodes, filler wire and shielding gas

Clean includes the following:

- slag and spatter

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05049B Perform routine gas tungsten arc welding

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05049 Perform routine gas tungsten arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05049B Perform routine gas tungsten arc welding

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from sketches and verbal or written job instructions for performing routine gas tungsten arc welding (GTAW)
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including selecting settings and consumables to suit application
- consistently welding materials to specifications
- cleaning welds in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- preparatory requirements
- equipment and equipment settings
- shielding gas properties and applications
- weld characteristics.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing routine GTAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05050 Perform routine gas metal arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05050B Perform routine gas metal arc welding

Application

This unit of competency defines the skills and knowledge required to prepare materials and carry out routine gas metal arc welding (GMAW) and applies in a maintenance or manufacturing environment where the weld quality is not required to meet an Australian Standard or equivalent.

Where welding is required to meet AS 1554 General Purpose or equivalent codes, work health and safety (WHS) regulations and/or licensing requirements unit MEM05017 Weld using gas metal arc welding process should also be selected.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	Prepare materials and equipment for welding	2.1	Identify location of welds in accordance with procedures and job specifications
		2.2	Clean and prepare materials ready for welding
		2.3	Set up welding equipment to meet work requirement
		2.4	Select settings and consumables to suit application
3	Perform routine welding using GMAW	3.1	Weld materials to job requirements
		3.2	Clean welds according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welds include the following:

- butt
- fillet

Materials include one (1) or more of the following:

- low carbon
- mild steels

Prepared includes one (1) or more of the following:

- pre-heating
- setting up jigs
- fixtures
- clamps
- joint preparation

Welding equipment includes the following:

- hoses
- welding leads and gas shrouds
- gas regulators
- liners
- contact tips

Consumables include the following:

- filler wire and shielding gas

Clean includes the following:

- slag and spatter

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05050B Perform routine gas metal arc welding

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05050 Perform routine gas metal arc welding

Modification History

Release 1. Supersedes and is equivalent to MEM05050B Perform routine gas metal arc welding

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications from sketches and verbal or written job instructions for performing routine gas metal arc welding (GMAW)
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including selecting settings and consumables to suit application
- consistently welding materials to specifications
- cleaning welds in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- different current and voltage settings, gas flow rates wire diameters, wire feed speed and other variables to suit typical situations
- material and equipment preparation
- properties and characteristics of materials and consumables
- equipment and equipment settings
- shielding gas properties and applications
- post-welding treatments
- weld characteristics.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing routine GMAW process at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05051 Select welding processes

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05051 Select welding processes (Release 1).

Release 1. Supersedes and is equivalent to MEM05051A Select welding processes.

Application

This unit of competency defines the skills and knowledge required to identify material properties and select appropriate welding processes that would typically conform to AS 1554 General Purpose and American Bureau of Shipping (ABS) or equivalent, to achieve safe and effective welding outcomes.

This unit applies to all types of welding and includes the identification of properties and characteristics of all commonly used metals, and selection of appropriate welding techniques to ensure integrity of materials is maintained during welding processes.

This unit can only be selected in conjunction with one or more of the following units:

- MEM05015 Weld using manual metal arc welding process
- MEM05017 Weld using gas metal arc welding process
- MEM05019 Weld using gas tungsten arc welding process
- MEM05023 Weld using submerged arc welding process
- MEM05047 Weld using flux core arc welding process
- MEM05055 Weld using oxy fuel gas welding process

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Identify properties of commonly used metals	2.1	Identify materials to be welded
		2.2	Identify characteristics and properties of commonly used materials
		2.3	Identify uses and purposes of commonly used materials
		2.4	Consider basic metallurgical characteristics
3	Identify and provide for welding contingencies	3.1	Source Information relevant to welding processes, as required
		3.2	Identify potential contingencies and consider solutions
4	Identify appropriate welding process	4.1	Identify and select welding processes to achieve specified outcomes with selected metals
		4.2	Identify effects of welding processes on materials
		4.3	Identify distortion prevention measures
		4.4	Identify alternative joining methods for job and assess for relevancy

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

5	Identify cleaning and preparation requirements	5.1	Identify processes for cleaning and preparing metals
		5.2	Consider role of contaminants in welding flaws
		5.3	Identify and utilise safety requirements for chemicals and other materials in accordance with manufacturers' specifications and legislative requirements

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Characteristics include the following:

- tensile strength, grade, heat resistance and density

Properties include the following:

- physical properties, flammable limits and melting point

Basic metallurgical characteristics include the following:

- alloys and grades of metals and different types of electrodes

Information includes one (1) or more of the following:

- steel suppliers' handbooks
- welding company materials
- SOPs
- safety documentation

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Welding processes include one (1) or more of the following:

- fusion – electric arc welding, gas (oxy-fuel) welding and thermit welding
- pressure welding processes – resistance welding, fire or forge welding, friction welding and explosive welding
- low temperature processes – soldering and brazing
- other – ultrasonic welding and electron beam welding

Effects include one (1) or more of the following:

- thermal expansion
- heat affected zones
- fume emissions
- altered density
- distortion

Distortion prevention measures include one (1) or more of the following:

- heat treatments
- consolidations

Processes for cleaning and weld preparation include one (1) or more of the following:

- etching
- grinding
- arc gouging
- thermal cutting
- chemical additives
- anti-corrosion treatments

Safety requirements include one (1) or more of the following:

- dry and ventilated areas
- in accordance with workplace procedures
- location away from heat risks
- location away from incompatible substances
- requirements for hazardous substances
- adequate signage and labelling
- appropriate sealing
- routine inspections
- emergency procedures
- regulatory notification requirements

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05051 Select welding processes (Release 1).

Release 1. Supersedes and is equivalent to MEM05051A Select welding processes.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05051 Select welding processes

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05051 Select welding processes (Release 1).

Release 1. Supersedes and is equivalent to MEM05051A Select welding processes.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying properties of common used metals
- identifying potential contingencies and considering solutions
- identifying and selecting appropriate welding process and the effects of the welding process on materials
- identifying processes for cleaning and preparing metals and the role of contaminants in welding flaws.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- properties and characteristics of commonly used metals and materials
- basic metallurgy principles associated with alloys and grades of metals
- uses and purposes of various metals
- distortion prevention measures for various metals
- different types of electrodes
- hazards associated with the use of chemicals and the fumes emitted by welding processes.

Assessment Conditions

- Assessors must:
 - have vocational competency in selecting welding processes at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM05052 Apply safe welding practices

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05052 Apply safe welding practices (Release 1).

Release 1. Supersedes and is equivalent to MEM05052A Apply safe welding practices.

Application

This unit of competency defines the skills and knowledge required to identify risks associated with welding operations that would typically conform to AS 1554 General Purpose and American Bureau of Shipping (ABS) or equivalent on all commonly used metals and the implementation of techniques used to reduce or eliminate welding hazards.

This unit can only be selected in conjunction with one or more of the following units:

- MEM05015 Weld using manual metal arc welding process
- MEM05017 Weld using gas metal arc welding process
- MEM05019 Weld using gas tungsten arc welding process
- MEM05023 Weld using submerged arc welding process
- MEM05047 Weld using flux core arc welding process
- MEM05055 Weld using oxy fuel gas welding process

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS) requirements at all times
		1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4 Identify job requirements from specifications, job sheets or work instructions
2	Identify risks associated with welding	2.1 Obtain and interpret work-related safety information
		2.2 Identify pollutants formed by welding processes
		2.3 Identify occupational diseases and injuries that are associated with welding
		2.4 Identify factors associated with increased risk
		2.5 Identify exposure levels for pollutants
		2.6 Identify risks and potential health effects associated with specific metals and gases in welding
		2.7 Identify other hazards of welding
3	Reduce risks associated with welding	3.1 Use manual handling techniques
		3.2 Implement procedures to control hazards and workplace safety procedures
		3.3 Report workplace safety non-compliances in accordance with workplace procedures

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS information

includes one (1) or more of the following:

- Safe Work Australia guidelines
- organisational WHS practices and procedures manuals
- Australian/New Zealand and ISO standards
- company risk management policy
- codes of practice
- Australian dangerous goods legislation
- trade practices
- WHS reporting requirements
- weld procedures

Work-related safety

information includes one (1) or more of the following:

- SOPs
- safety data sheets (SDSs)
- job sheets
- emergency procedures
- safety standards and procedures

Pollutants include one (1) or more of the following:

- nitrogen oxides
- ozone
- metal fumes
- lead oxide
- silicon oxide
- calcium fluoride
- calcium oxide
- magnesium oxide
- sodium oxide
- potassium oxides
- carbon dioxide

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- organics
- iron
- manganese
- calcium carbonate
- zirconium oxide
- titanium oxide
- hexavalent chromium

Occupational diseases and injuries include one (1) or more of the following:

- eye injuries
- skin damage
- respiratory irritations
- chronic effects
- allergies

Factors include one (1) or more of the following:

- gas leakage from cylinders
- type of consumable and metals used
- type of welding processes
- type of electrodes
- welding current
- voltage and amperage
- ventilation
- contamination
- interaction of chemicals
- exposure levels
- flammability

Exposure levels include one (1) or more of the following:

- time weighted average
- short term exposure limit (STEL)
- maximum allowable concentration (MAC) or threshold limit value - ceiling (TLV-C)
- skin notation

Specific metals include one (1) or more of the following:

- aluminium
- antimony
- arsenic

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- beryllium
- boron
- cadmium
- chromium
- copper
- cobalt
- iron
- lead
- lithium
- magnesium
- manganese
- mercury
- molybdenum
- nickel
- platinum
- selenium
- silver
- thorium
- tin
- titanium
- tungsten
- vanadium
- zinc
- zirconium

Gases include one (1) or more of the following:

- acetylene
- argon
- carbon dioxide
- carbon monoxide
- helium
- nitrogen oxides
- ozone
- phosgene
- phosphine
- stibine

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Other hazards include one (1) or more of the following:

- fluxes
- electro-magnetic radiation
- electric shock
- sparks
- spatter
- contaminated and coated metals
- gas cylinder and electrical hazards
- confined spaces
- noise
- chemical exposure
- solvents
- musculoskeletal, back and overuse injuries
- vibration
- dusts
- heat stress
- ultraviolet radiation
- airborne pollutants
- flammable gases
- infrared radiation
- thermal damage

Manual handling techniques include one (1) or more of the following:

- housekeeping practices
- lifting weight limits
- appropriate storage
- use of lifting devices
- appropriate training
- hazardous materials storage standards and procedures

PPE includes one (1) or more of the following:

- respirators
- ear muffs
- protective clothing
- gloves
- boots
- helmets
- eye protection
- face shields

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Procedures to control hazards include one (1) or more of the following:

- substituting hazardous materials with safer materials
- changing workplace design to eliminate hazards
- modifying work practices to reduce exposure
- using PPE
- using adequate and appropriate ventilation

Workplace safety measures include one (1) or more of the following:

- shielding requirements
- ventilation
- general and diluted
- local exhaustion
- use of PPE
- checking equipment condition
- equipment maintenance
- correct operation of equipment
- correct voltage and electrical connections
- good posture
- fire safety, plant and equipment isolation
- communications with appropriate personnel

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05052 Apply safe welding practices (Release 1).

Release 1. Supersedes and is equivalent to MEM05052A Apply safe welding practices.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05052 Apply safe welding practices

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05052 Apply safe welding practices (Release 1).

Release 1. Supersedes and is equivalent to MEM05052A Apply safe welding practices.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting work health and safety (WHS) information and legislation
- identifying risks and hazards associated with welding
- implementing risk control measures and procedures, including using appropriate manual handling techniques and personal protective equipment (PPE)
- reporting workplace non-compliances in accordance with workplace procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of PPE
- characteristics and properties of common metals and welding materials
- effect of gas and electrical welding operations on metals
- effect of various treatments on a range of commonly used metals
- WHS information and sources
- work-related safety information
- pollutants present as a result of welding activities
- all the welding processes, including equipment and material requirements
- hazards associated with welding processes and methods to minimise those hazards.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying safe welding practices at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07005 Perform general machining

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07005 Perform general machining (Release 1).

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining.

Application

This unit of competency has been developed for Engineering Tradesperson – Mechanical apprenticeship training and the recognition of trade-level skills in non-computer numerical controlled (CNC) machining of ferrous and non-ferrous materials.

Where high level production machining applications are undertaken unit MEM07041 Perform production machining should be selected.

Where set-up and operation of electro-discharge machines (EDM) is required unit MEM07014 Perform electro-discharge machining (EDM) operations should also be selected.

Where machining is undertaken without undertaking any set up, including mounting of tools, setting of speeds, feeds and other operational parameters unit MEM07024 Operate and monitor machine and process and unit MEM07025 Perform advanced machine and process operation, should be selected as appropriate.

Where the selection and use of precision measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where substantial marking out is required unit MEM12006 Mark off/out (general engineering) should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Determine sequence of	2.1	Determine sequence of operations to meet job specifications

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	operations	2.2	Select appropriate material and establish datum, as required
3	Select and mount tools	3.1	Select appropriate tools for job, sharpen and shape, as required
		3.2	Mount and position tools to meet requirements
4	Perform machining operations	4.1	Transfer dimensions to determine machining parameters
		4.2	Set machining parameters to meet job requirements and maximise tool life
		4.3	Ensure work is securely held to avoid damage to product, and meet safety requirements
		4.4	Perform machining to produce product to meet specifications
		4.5	Carry out routine maintenance and adjustments, as required
5	Check components	5.1	Check components for compliance with specifications
		5.2	Rectify non-compliant product in accordance with SOPs as required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- Operations include one (1) or more of the following:**
- parallel cutting
 - slotting
 - planing
 - drilling
 - knurling
 - cutting flats
 - non-precision surface grinding operations

- Materials include one (1) or more of the following:**
- ferrous
 - non-ferrous

- Measuring instruments include one (1) or more of the following:**
- micrometres
 - vernier calipers
 - calipers
 - steel rules
 - dividers
 - scribes

- Tools include the following:**
- cutting tools
 - tool holders

- Machining parameters include one (1) or more of the following:**
- speeds
 - feeds
 - stops
 - coolant and cutting lubricants

- Machines include one (1) or more of the following:**
- lathes
 - mills
 - planers
 - shapers
 - slotters
 - surface grinder

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Maintenance and adjustments include one (1) or more of the following:

- machining parameters
- slide and collar adjustment
- cleaning and lubrication

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07005 Perform general machining (Release 1).

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07005 Perform general machining

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07005 Perform general machining (Release 1).

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- planning a job including identifying job requirements from drawings, instructions or specifications and a sequence of operations
- identifying any required tooling, measuring equipment and accessories
- selecting and mounting required tooling
- selecting material and marking out, as required
- performing machining to meet specifications
- checking machined components for conformance to specifications and identifying adjustments to be made to settings/tooling
- rectifying non-compliant components
- carrying out routine maintenance and adjustments, as required.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- reasons for selecting the chosen sequence of operations
- methods of work holding for machining operations
- transferring dimensions, including establishing datum points/lines
- geometry of cutting tools for a range of materials and applications
- reasons for maintaining properly sharpened cutting tools
- principles underpinning machining operations
- selection of feeds and speeds to suit a range of materials and operations
- methods of mounting a range of cutting tools
- safety precautions associated with clamping materials, guards and shields
- tolerances and limits of size

- machine adjustment, lubrication and cleaning
- measurement techniques, tools and devices
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing general machining at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07006 Perform lathe operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07006 Perform lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07006C Perform lathe operations.

Application

This unit of competency has been developed for Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trade-level skills in performing machining operations on a lathe to produce components to required tolerances and specifications using all types of accessories.

Skills covered by this unit are generally applied in occupational and work situations associated with trade-level fitting and machining work.

This unit does not cover turning of multi-start threads or use of taper turning attachment, copy turning attachment or multi-start threads.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements

MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare to undertake work	2.1	Determine sequence of operation
		2.2	Select tooling, using International Standard Organisation (ISO) standards or according to SOPs, to produce component to specification
		2.3	Set up job using appropriate measuring instruments
3	Perform turning operations	3.1	Calculate speeds and feeds
		3.2	Set up machine, changing gears and speed using a lead screw and appropriate mathematical techniques and

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

reference material

3.3 Use the full range of accessories on a centre lathe

3.4 Perform turning operations to specification

4 **Check components**

4.1 Check components for compliance with specifications

4.2 Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Tooling includes one (1) or more of the following:

- high speed steel, tungsten carbide, ceramic graphite and other standard cutting tools
- boring bars
- drills
- reamers
- thread chasers
- tapping heads
- taps

Instruments include one (1) or more of the following:

- manual and digital micrometres
- vernier calipers
- dial indicators
- scribing blocks

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Speeds and feeds include one (1) or more of the following:

- setting up machine
- changing gears and speeds
- use of lead screw
- calculations

Accessories include the following:

- three and four jaw chucks
- centres
- face plate
- steadies
- cross slide
- tailstock

Turning operations include one (1) or more of the following:

- manual parallel and taper turning
- internal and external turning, including boring drilling, reaming, single start thread cutting and parting off

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07006 Perform lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07006C Perform lathe operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07006 Perform lathe operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07006 Perform lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07006C Perform lathe operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting engineering drawings to AS 1100,401-1884 (R2014) Technical drawing to determine job requirements for lathe operations, including quantity, material, measurements and tolerances
- selecting cutting tools using International Standard Organisation (ISO) standards or according to SOPs from drawings, sketches, specifications and instructions, as appropriate
- fixing of job and tooling to specifications
- calculating and setting required speeds and feeds
- undertaking turning operations to specifications
- checking components for conformance to specifications
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- sequence of lathe operations to achieve job requirements
- tool type and geometry to achieve required specifications and for work pieces of different materials
- numerical operations, geometry and calculations/formulae for lathe operations
- consequences of varying speeds and feeds from the optimum rates calculated
- characteristics of different materials and their effects on cutting speeds and feeds
- application of lathe accessories
- techniques, tools and equipment to measure materials and machined components
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing lathe operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07007 Perform milling operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07007 Perform milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07007C Perform milling operations.

Application

This unit of competency has been developed for Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trade-level skills in using a range of milling machines to produce components to required tolerances and specifications using all types of accessories.

Skills covered by this unit are generally applied in occupational and work situations associated with trade-level fitting and machining work.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering

MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare to undertake work	2.1	Determine sequence of operations to meet job specifications
		2.2	Select tooling, using International Standard Organisation (ISO) standards or according to SOPs, to produce component to specification
		2.3	Determine cutting parameters
3	Perform milling operations	3.1	Carry out milling operations to produce components to specification
		3.2	Undertake operations using conventional and/or climb milling techniques and a variety of cutters
		3.3	Use the full range of standard accessories

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

4 Check components

4.1 Check components for compliance with specifications

4.2 Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Milling machines include one (1) or more of the following:

- vertical
- horizontal
- universal types

Tooling includes one (1) or more of the following:

- slab
- gang
- end
- shell
- slot
- form
- slitting cutters

Instruments include one (1) or more of the following:

- manual and digital micrometres
- vernier calipers
- dial indicators
- scribing blocks

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Cutting parameters include one (1) or more of the following:

- setting up machine
- feed and speed calculations

Accessories include the following:

- dividing heads
- rotary tables

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07007 Perform milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07007C Perform milling operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07007 Perform milling operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07007 Perform milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07007C Perform milling operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting engineering drawings to AS 1100,401-1884 (R2014) Technical drawing to determine job requirements for milling operations, including quantity, material, measurements and tolerances
- selecting cutting tools using International Standard Organisation (ISO) standards or according to SOPs from drawings, sketches, specifications and instructions, as appropriate
- fixing of job and tooling to specifications
- calculating and setting required speeds and feeds
- undertaking milling operations to specifications
- checking components for conformance to specifications
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- sequence of milling operations to achieve the job requirements
- cutter types and tooling geometry
- consequences of varying speeds and feeds from the optimum rates calculated
- effects of different materials on cutting speeds and feeds
- conventional and climb milling techniques and their applications
- application of each of the following:
 - slab
 - gang
 - shell
 - slot

- form and slitting
- use of dividing heads and rotary tables when milling components
- procedures for using dividing heads and rotary tables on milling machines
- appropriate techniques, tools and equipment to measure milled components
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing milling operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07008 Perform grinding operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07008 Perform grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07008D Perform grinding operations.

Application

This unit of competency has been developed for Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trad- level skills in performing grinding operations and checking finished components for conformance to specifications.

Skills covered by this unit are generally applied in occupational and work situations associated with trade-level fitting and machining work.

Where the selection and use of precision mechanical measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations

MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare to undertake work	2.1	Determine sequence of operations to meet job specifications
		2.2	Select and apply appropriate holding devices
		2.3	Check machine guards, coolant and dust extraction devices
3	Select grinding wheels and accessories	3.1	Select and dress wheels based on knowledge of grinding wheel structure and application
		3.2	Select accessories to facilitate production to job specifications

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

4	Perform grinding operations	4.1	Set up grinding machine and adjust in accordance with defined procedures
		4.2	Ensure work is securely held to avoid damage to product, and meet safety requirements
		4.3	Perform grinding operations to specifications
5	Check components	5.1	Check components for compliance with specifications
		5.2	Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Grinding machines include one (1) or more of the following:

- surface
- cylindrical
- centreless

Specifications include one (1) or more of the following:

- dimensions and tolerances
- geometry and tolerances
- surface finish

Holding devices include one (1)

- vices

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

or more of the following:

- clamps
- magnetic chucks
- face plates
- collets
- 3/4 jaw chuck

Wheels include one (1) or more of the following:

- shape
- grit/bond composition

Balanced includes the following: • static and dynamic balancing

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07008 Perform grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07008D Perform grinding operations.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07008 Perform grinding operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07008 Perform grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07008D Perform grinding operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- determining requirements for grinding job, including quantity, material, measurements and tolerances
- planning a job, including identifying required measuring instruments and equipment, safety equipment, holding devices, grinding wheels, accessories and sequence of operations
- identifying guard, coolant and dust extraction requirements and checking equipment and coolant before grinding operation
- securely hold job for grinding operations
- performing grinding operation to specifications
- checking components for conformance to specifications
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- reasons for selecting the chosen sequence of grinding operations
- application of a range of holding devices/accessories
- reasons for selecting specific work holding devices, tools, techniques and equipment
- coolant selection and function
- standard grinding wheel shapes
- range of abrasive materials used in grinding wheels
- factors impacting grinding wheel selection, including:
 - grain size of abrasive particles
 - grade or strength of bond

- bond material
- grinding wheel dressing tools and their application
- internal/external cylindrical grinding process
- principles of effective clamping
- grinding operations and procedures
- function of grinding accessories
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing grinding operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07011 Perform complex milling operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07011 Perform complex milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07011B Perform complex milling operations.

Application

This unit of competency defines the skills and knowledge required to perform complex milling operations on a range of materials, including non-standard metals and alloys.

It applies to a range of complex milling operations, including jobs requiring high precision or quality and operations requiring complex calculations.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM07007	Perform milling operations
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering

MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Select milling cutters	2.1	Select correct milling cutter/s for required operation
		2.2	Select correct cutter inserts using International Standard Organisation (ISO) standards as required, and mount in cutter blank
		2.3	Mount cutter to machine spindle and check for concentricity
3	Set up work	3.1	Determine the cutting parameters and steps required to mill components
		3.2	Set up machine with appropriate accessories for milling operations, as required
		3.3	Set up work to required level of accuracy

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

4	Perform complex milling	4.1	Perform calculations as necessary to achieve specifications for component to be milled
		4.2	Check components for compliance with specifications
		4.3	Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Complex milling operations include one (1) or more of the following:

- cutting of one or more of the following:
 - spur gears
 - racks
 - helical gears
 - radial uniform rise cam lobes

Milling cutter/cutters include one (1) or more of the following:

- ganged cutters
- form cutters

Set up includes the following:

- verifying using instruments, including dial test indicators and sine bars

Appropriate accessories

- omniversal tables

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

include the following:

- differential dividing heads

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07011 Perform complex milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07011B Perform complex milling operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07011 Perform complex milling operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07011 Perform complex milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07011B Perform complex milling operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to carry out complex milling operations
- selecting appropriate cutter inserts for cutting operations according to specifications and ISO standards
- calculating cutting parameters, including speeds, feeds and ratios
- setting up gear trains according to calculations and standard operating procedures
- perform complex milling using dividing heads and omniversal tables to specifications
- checking components for conformance to specifications using precision measuring instruments
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- precision measuring equipment and their applications
- procedures for accurately setting up work
- ISO standards applicable to milling cutter inserts
- procedures for milling components, such as racks and gears
- calculations, geometry and formulae relating to complex milling activities
- accessories used for complex milling
- applications and use of omniversal tables and differential dividing heads to complex milling operations
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing complex milling operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07012 Perform complex grinding operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07012 Perform complex grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07012B Perform complex grinding operations.

Application

This unit of competency defines the skills and knowledge required to perform complex and high precision grinding operations.

Grinding operations are performed on a variety of materials to achieve high levels of precision for dimensions and finish.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM07008	Perform grinding operations
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities

MEM16006 Organise and communicate information

MEM18001 Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Set up work	2.1	Select grinding wheels based on shape and grit/bond composition and dress to form and size, as required
		2.2	Set up work to required level of accuracy according to specifications
3	Perform complex grinding	3.1	Perform specialised grinding operations on components
		3.2	Check components for compliance with specifications
		3.3	Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Complex and high precision grinding operations include one (1) or more of the following:	• jig grinding • grinding eccentrics • thread grinding • gauges • shapes and forms

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07012 Perform complex grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07012B Perform complex grinding operations.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07012 Perform complex grinding operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07012 Perform complex grinding operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07012B Perform complex grinding operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to carry out complex grinding operations
- dressing grinding wheel to form and size
- setting up work pieces for the operations and selecting suitable tools and accessories
- undertaking numerical operations, geometry and calculations for specialised complex grinding operations
- carrying out a range of complex grinding operations
- checking components for conformance to specifications using precision measuring instruments
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- reasons for selecting the chosen sequence of complex grinding operations
- function and application of work holding devices/accessories appropriate to complex grinding
- appropriate techniques, tools and equipment to measure machined components
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:

- have vocational competency in performing complex grinding operations at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM07021 Perform complex lathe operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07021 Perform complex lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07021B Perform complex lathe operations.

Application

This unit of competency defines the skills and knowledge required to perform complex turning operations on a range of materials, including non-standard metals and alloys.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM07006	Perform lathe operations
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information

MEM18001 Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications, drawings, job sheets or work instructions
2 Set up work on lathe	2.1 Determine sequence of operations, including job set-up, for maximum efficiency to meet job specifications 2.2 Set up work on the lathe to required level of accuracy using precision instruments, including dial test indicators 2.3 Balance work piece when using face plates to ensure accuracy in machining, as required 2.4 Set up work piece to ensure that work piece is free of distortion following completion of machining
3 Select and prepare tooling	3.1 Select tooling, accessories and consumables appropriate to task, specifications and material 3.2 Determine cutting tool modifications required to perform complex turning operations, where appropriate 3.3 Prepare tooling and accessories and modify, as required

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

		3.4	Apply International Standard Organisation (ISO) standards for cutting tools or other appropriate standards to suit cutting parameters
4	Perform complex turning	4.1	Calculate speeds and feeds using appropriate mathematical techniques and reference material
		4.2	Undertake complex turning to specifications and workplace procedures
		4.3	Measure work piece and verify in accordance with specifications using precision measuring equipment

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Tooling includes one (1) or more of the following:

- cutting tools
- form tools
- boring bars
- drills
- reamers
- thread chasers
- tapping heads
- taps

Complex turning

- single-start and multi-start thread cutting

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

- includes one (1) or more of the following:**
- internal blind hole thread cutting
 - eccentrics
 - copy and taper turning
 - counterbalancing work on face plates
 - mandrel work
 - trepanning
 - heavy (multi-tonne) shafts

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07021 Perform complex lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07021B Perform complex lathe operations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07021 Perform complex lathe operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07021 Perform complex lathe operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07021B Perform complex lathe operations.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents in performing complex lathe operations
- setting and supporting work to avoid distortion on release of clamping devices
- selecting and setting up cutting tooling or inserts as appropriate to turning operation
- calculating cutting parameters, speeds and feeds to meet job requirements
- modifying tooling and accessories, as required
- performing complex turning operations according to specifications
- checking machined components for conformance to specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- precision measuring equipment and measuring techniques used in complex turning operations and reasons for selecting different measuring equipment
- procedures for accurately setting up work for a variety of techniques
- International Standards Organisation (ISO) or other standards applicable to cutting tool inserts
- cutting parameters for the given task
- feeds and speeds for complex turning operations
- formulae and data relating to feeds and speeds
- techniques and procedures for carrying out the following turning operations:
 - single-start thread cutting
 - multi-start thread cutting
 - internal blind hole thread cutting

- eccentrics
- copy turning
- taper turning
- counter balancing work on face plates
- mandrel work
- trepanning
- heavy (multi-tonne) shafts.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing complex lathe operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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MEM09002 Interpret technical drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Application

This unit of competency defines the skills and knowledge required to interpret technical drawings.

Technical drawings may utilise perspective, exploded views or hidden view techniques and may include symbol glossaries. Drawings are provided to AS 1100 Technical drawing or AS 1102 Graphical symbols and their equivalents from the full range of engineering disciplines.

Where any technical drawing, sketch, chart, diagram is only used as a technique for communication, then this unit does not apply: unit MEM12023 Perform engineering measurements or unit MEM16006 Organise and communicate information should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Identify job requirements from specifications, job sheets or associated work instructions
2. Interpret technical drawing	2.1 Check drawing and version and validate against job requirements 2.2 Recognise components and assemblies or objects 2.3 Identify dimensions, instructions and material requirements 2.4 Recognise symbols used in the drawing 2.5 Compile list of required materials

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Drawing interpretation includes recognising the following:

- relationship between the views contained in the drawing
- objects
- units of measurement

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- dimensions of the key features
- symbols

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09002 Interpret technical drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting, checking and validating technical drawing against job requirements or equipment
- interpreting technical drawing through recognition of components, assemblies, objects and symbols
- identifying dimensions
- applying drawing conventions appropriate to engineering discipline
- compiling a materials list.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- application of AS 1100 Technical drawing or AS 1102 Graphical symbols
- conventions used in technical drawings
- correct interpretation of instructions contained in drawings
- materials from which drawing object(s) are made and their features and manufacturing and assembly requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in interpreting technical drawings at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM09003 Prepare basic engineering drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09003B Prepare basic engineering drawing

Application

This unit of competency defines the skills and knowledge required to prepare basic engineering drawings across mechanical, electrical/electronic, fabrication and fluid power applications, and includes preparing new drawings or changing existing drawings. Manual and computer aided drafting and drawing equipment can be used. Preparation of parts lists and issuing of drawing documents is included.

Specifications for drawings are pre-determined and are obtained from design information, customer requirements, sketches and preliminary layouts.

Where a more extensive computer-aided design (CAD) system is used for design, unit MEM09009 Create 2-D drawings using computer-aided design system should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements and purpose of drawing from specifications, associated documents or work instructions
		1.5	Identify and collect all data necessary to produce the drawing
		1.6	Confirm drawing requirements and method with relevant personnel and establish timeframes for completion
2	Prepare or make changes to engineering drawing	2.1	Select drafting equipment appropriate to the drawing method chosen
		2.2	Apply drafting principles to produce a drawing that is consistent with SOPs, in consultation with supervisor, as required
		2.3	Ensure completed drawing is approved in accordance with SOPs
3	Prepare engineering parts list	3.1	Identify components parts and organise by component type in accordance with SOPs and customer requirements
4	Issue drawing	4.1	Complete drawings and parts lists records in accordance with SOPs

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 4.2 Copy approved drawings and parts lists and issue to relevant personnel
- 4.3 Store approved drawings and parts lists, and catalogue in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Relevant personnel include one (1) or more of the following:

- technical personnel
- supervisors
- manufacturers
- suppliers
- contractors
- customers

Drafting principles include the following:

- interpreting AS 1100.101-1992 (R2014) Technical drawing – General principles as required to prepare drawing
- preparing drawings in accordance with AS 1100.101-1992 (R2014) Technical drawing – General principles, or equivalent, as required

Completing records include one (1) or more of the following:

- cataloguing
- issuing security classifications
- filing
- preparing distribution lists

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Issued includes one (1) or more of the following:

- hard copy
- photographic
- slide or transparency form
- presentation as a single drawing or with other drawings
- presentation as a package

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09003B Prepare basic engineering drawing

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09003 Prepare basic engineering drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09003B Prepare basic engineering drawing

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and confirming drawing requirements and purpose through consultation with relevant personnel, and establishing timeframes for completion
- setting up and using drafting equipment
- applying drafting principles in accordance with AS 1100.101-1992 (R2014) Technical drawing – General principles or equivalent
- resolving any issues in the preparation of engineering drawing in consultation with a supervisor
- undertaking numerical operations, geometry and calculations and formulae associated with preparing basic engineering drawings
- compiling an engineering parts list by component type
- issuing completed drawing and parts list to relevant personnel
- storing and cataloguing approved drawing and parts list in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- requirements and purpose of drawing and engineering parts list to be produced
- sources and standards of relevant data and information to which drawing is to be produced
- person(s) who can confirm drawing requirements and timeframe for completion
- method of drawing preparation and reasons for selecting the chosen drawing method
- procedures for:
 - producing an initial drawing
 - changing an existing drawing
 - checking and approving drawings and persons responsible
 - copying, issuing and recording approved drawings and or parts lists

- safe handling and storage and filing of drawings and/or parts lists and consequences of using inappropriate techniques
- drafting principles to be applied to the production and changing of a drawing
- consequences of inappropriate and incomplete components parts lists
- personnel to whom copies of approved drawings and or parts lists can be issued.

Assessment Conditions

- Assessors must:
 - have vocational competency in preparing basic engineering drawing at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM09004 Perform electrical or electronic detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09004B Perform electrical/electronic detail drafting

Application

This unit of competency defines the skills and knowledge required to produce or make changes to electrical or electronic drawings under supervision using manual drafting or drawing equipment. It applies to all electrical and electronic areas, with drawings completed to AS 1102 Graphical symbols, or equivalent, and in accordance with predetermined design specifications and instructions.

Where a computer-aided drafting (CAD) system is used unit MEM09009 Create 2-D drawings using computer-aided design system and MEM09010 Create 3-D models using computer-aided design system, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM09003	Prepare basic engineering drawing
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements from specifications, job sheets or associated work instructions
2	Prepare electrical or electronic drawings	2.1	Draw schematic to indicate the relative positioning of electrical or electronic components
		2.2	Produce electrical or electronic drawings to include all relevant specifications
		2.3	Complete drawing to AS 1102 Graphical symbols or equivalent
3	Determine component and material requirements	3.1	Identify material and component requirements using design specifications
		3.2	Select required materials and components from supplier catalogues
4	Complete documentation	4.1	Complete drawings and associated documentation in accordance with SOPs
		4.2	Issue and store drawings and documentation in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Drawings include the following:

- plans
- schematics
- layouts
- circuit diagrams
- charts

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09004B Perform electrical/electronic detail drafting

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09004 Perform electrical or electronic detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09004B Perform electrical/electronic detail drafting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing or making changes to electrical or electronic schematics and drawings to AS 1102 Graphical symbols, or equivalent, indicating relative positioning of components
- undertaking numerical operations, geometry, calculations and formulae associated with performing electrical or electronic detail drafting
- determining and selecting components and materials according to design specification
- completing documentation according to SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- relative position of electrical or electronic components
- symbols used in electrical or electronic schematics and drawings
- specifications of all components
- circuit specifications
- requirements of AS 1102 Graphical symbols or equivalent with respect to electrical or electronic schematics and drawings
- design specifications of the circuit and components
- appropriate components and materials from supplier catalogues
- reasons for selecting the chosen components and materials.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing electrical or electronic detail drafting at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM09005 Perform basic engineering detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09005B Perform basic engineering detail drafting

Application

This unit of competency defines the skills and knowledge required to produce drawings to AS 1100 Technical drawing or equivalent using manual drafting or drawing equipment, where the critical dimensions, associated tolerances and design specifications are predetermined.

Where a computer-aided design (CAD) system is used unit MEM09009 Create 2-D drawings using computer-aided design system and MEM09010 Create 3-D models using computer-aided design system, should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM09003	Prepare basic engineering drawing
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS) requirements at all times
		1.3 Identify job requirements from specifications, job sheets or associated work instructions
2	Prepare assembly, layout and detail drafting	2.1 Prepare drawings in plane orthogonal, isometric projection or equivalent, including auxiliary views and sections to AS 1100 Technical drawing
		2.2 Prepare layout, assembly and component drawings from specifications
		2.3 Apply drawing dimensions and label using supplied tolerances in accordance with AS 1100 Technical drawing
		2.4 Produce drawings to specification in accordance with SOPs
		2.5 Use standard symbols to AS 1100 Technical drawing, or equivalent, to specify requirements
3	Determine component and material requirements	3.1 Identify component and material requirements according to design specifications
		3.2 Compile component and materials list
4	Complete documentation	4.1 Complete drawings and associated documentation in accordance with SOPs
		4.2 Store drawings and documentation in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

AS 1100 Technical drawing includes the following:

- interpretation under guidance, particularly in respect to any geometric tolerancing. AS 1100 Technical drawing is an extensive work and its application would usually be in line with SOPs

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09005B Perform basic engineering detail drafting

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09005 Perform basic engineering detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09005B Perform basic engineering detail drafting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing layout, assembly and component drawings to AS 1100 Technical drawing in line with SOPs in plane orthogonal, isometric projection or equivalent, including auxiliary views and sections
- applying dimensions and labelling using supplied tolerances
- producing drawings to specifications using standard symbols to AS 1100 Technical drawing or equivalent
- undertaking numerical operations, geometry, calculations and formulae associated with performing basic engineering detail drafting
- compiling a component and materials list
- completing documentation according to SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- appropriate projection for the drawing purpose and reasons for selection
- reasons for including auxiliary views in drawings
- requirements of AS 1100 Technical drawing or equivalent with respect to dimensions, tolerances and labels
- procedures for producing component, layout and assembly drawings, and uses of drawings
- numerical operations, geometry, calculations and formulae associated with performing basic engineering detail drafting
- common symbols used in drawings to AS 1100 Technical drawing or equivalent
- design specifications of components
- appropriate components and materials from supplier catalogues and reasons for selection.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing basic engineering detail drafting at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM09006 Perform advanced engineering detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09006B Perform advanced engineering detail drafting

Application

This unit of competency defines the skills and knowledge required to use manual drafting and drawing equipment to produce assembly, layout and detail drawings to AS 1100 Technical drawing or equivalent.

Skills covered by this unit are applied individually or in a team environment where comprehensive responsibility for the production of the drawing is exercised, and critical dimensions and associated tolerances are determined as required.

Where a computer-aided design (CAD) system is used unit MEM09009 Create 2-D drawings using computer-aided design system and unit MEM09010 Create 3-D models using computer-aided design system, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM09003	Prepare basic engineering drawing
MEM09005	Perform basic engineering detail drafting
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements job sheets or other associated work instructions
2	Prepare assembly, layout and detail drawing	2.1	Determine specification requirements
		2.2	Undertake engineering calculations to determine all dimensions required to ensure functional operation and suitability
		2.3	Produce all drawings to AS 1100 Technical drawing or equivalent
3	Select material, components or assemblies	3.1	Select material, components or assemblies from data sheets or supplier catalogues to meet specifications
		3.2	Compile material, component or assembly list
4	Check drawings	4.1	Check drawings to ensure compliance with specifications
		4.2	Check drawings to ensure that assembly or fabrication is possible

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Dimensions include the following:

- limits and fits
- surface texture
- datum references
- geometric tolerances

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09006B Perform advanced engineering detail drafting

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09006 Perform advanced engineering detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09006B Perform advanced engineering detail drafting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing layout, assembly and detail drawings to AS 1100 Technical drawing or equivalent according to specifications including undertaking calculations to determine all dimensions appropriate to ensure functional operation and suitability
- undertaking numerical operations, geometry, calculations and formulae associated with performing advanced engineering detail drafting
- interpreting data sheets and supplier catalogues to select material, components or assemblies to meet specifications
- checking drawing for compliance with specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- specifications and requirements of the component, assembly or layout to be drawn
- numerical operations, geometry, calculations and formulae associated with performing advanced engineering detail drafting
- functional operation of the component or assembly to be drawn
- surfaces which are to be in contact or separated
- appropriate type of fit for contacting surfaces and reasons for selection
- effect of surface finish on the performance and operation of surfaces
- appropriate datum points
- procedures for determining all appropriate lineal, diametric and geometric tolerances
- requirements of AS 1100 Technical drawing or equivalent for the drawings to be produced
- specifications of the materials, components or assemblies
- appropriate components and materials from supplier catalogues and reasons for selection

- procedures and reasons for checking the drawings to ensure that manufacturing or assembly is possible, efficient and cost effective
- drawing specifications
- methods of manufacture or assembly from the drawings
- unnecessary or inappropriate tolerances.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced engineering detail drafting at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM11011 Undertake manual handling

Modification History

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Application

This unit of competency defines the skills and knowledge required to lift and move materials manually and/or using basic manual handling equipment in a wide range of environments.

Maximum manual lifting weight is limited to Safe Work Australia recommendations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Materials handling

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Lift materials manually	2.1	Determine material weight correctly utilising most appropriate technique, and assess risks associated with lifting
		2.2	Undertake lifting techniques to Safe Work Australia recommended procedures and having regard to types of movement, methods, storage, height and position
3	Move/shift materials manually	3.1	Select appropriate equipment, as required
		3.2	Place material safely and securely on moving equipment
		3.3	Relocate material ensuring safety of personnel and security of material
		3.4	Unload material and place in a safe and secure manner

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Material weight includes

- determined using scales

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

one (1) or more of the following:

- interpreting signage

Lifting techniques include one (1) or more of the following:

- individual
- team lifting
- use of appropriate lifting equipment

Appropriate equipment includes one (1) or more of the following:

- hand trolleys
- wheelbarrows
- motorised/hand pallet trucks (not sit on)
- hand carts
- dedicated production or process lifting equipment
- baskets, spreader bars, cradles or the like attached to lifting equipment

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM11011 Undertake manual handling

Modification History

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- assessing the risks associated with lifting materials manually and determining the most appropriate technique
- selecting and using the appropriate equipment to move/shift materials ensuring safety of personnel and security of material.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- manual handling techniques, including individual or team lifting
- appropriate equipment associated with move/shift materials
- hazards of incorrect procedures
- Safe Work Australia standards for manual handling.

Assessment Conditions

- Assessors must:
 - have vocational competency in undertaking manual handling at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM12003 Perform precision mechanical measurement

Modification History

Release 1. Supersedes and is equivalent to MEM12003B Perform precision mechanical measurement

Application

This unit of competency defines the skills and knowledge required to perform precision mechanical measurement.

This unit covers comprehensive measuring skills where judgement is required in the selection of the most appropriate techniques/devices and where results are interpreted and/or analysed.

Where interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band:

This unit has dual status and is to be regarded as both a Specialisation Band A unit and Specialisation Band B unit for progression to C7 (AQF level IV).

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	Perform precision measurement	2.1	Select appropriate precision equipment to achieve specified outcome
		2.2	Check the accuracy of the selected measuring equipment for where appropriate
		2.3	Use correct and appropriate measuring techniques for the measurement task
		2.4	Take measurements to the finest graduation of instrument in an accurate manner
		2.5	Interpret readings and measurements
3	Maintain precision equipment	3.1	Set measuring equipment to specifications using manufacturer guidelines or procedures and techniques
		3.2	Adjust and maintain measuring equipment to required accuracy using appropriate techniques according to manufacturer's specifications or SOPs
		3.3	Store equipment to manufacturer's specifications or SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Equipment includes one (1) or more of the following:

- strip gauges
- precision squares
- angle dekkors
- sine bars
- angle gauges
- polygons
- precision levels
- dial indicators
- vernier protractors
- shadow graphs
- vibration measurement equipment
- dynamic balancing equipment
- micrometres
- height gauges
- hardness testers
- texture measuring equipment

Measurements include one (1) or more of the following:

- length
- circular
- straightness
- flatness
- hardness
- angles
- finishes
- textures
- roundness
- squareness
- alignment and coordinate measurement

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12003B Perform precision mechanical measurement

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM12003 Perform precision mechanical measurement

Modification History

Release 1. Supersedes and is equivalent to MEM12003B Perform precision mechanical measurement

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting measurement requirements from specifications, including sketches and job instructions, schematics, diagrams and technical manuals
- selecting appropriate measuring device or equipment to achieve the required outcome
- checking the accuracy of the selected measuring equipment where appropriate
- setting up measuring equipment where appropriate
- obtaining measurements on components or equipment in a safe and effective manner, interpreting results and recording measurements, as required
- storing and maintaining measuring devices including routine adjustments according to manufacturer's specifications or SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- appropriate precision mechanical measuring device for given measurement requirements
- procedures for verifying equipment being used has been recently calibrated
- procedures for obtaining a range of mechanical measurements and techniques to be used
- suitability of environmental conditions for the measurements being carried out
- setting precision mechanical measuring devices procedures
- accuracy to which a range of precision mechanical measuring devices can be read
- procedures for reading graduated mechanical measuring devices
- units of measurement and numerical operations within the scope of this unit
- specifications of the equipment to be set
- tools and equipment for setting mechanical measuring devices
- procedures and techniques required to undertake adjustments to a range of precision mechanical measuring devices

- storage procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing precision mechanical measurement at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM12007 Mark off/out structural fabrications and shapes

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM12007 Mark off/out structural fabrications and shapes (Release 1).

Release 1. Supersedes and is equivalent to MEM12007D Mark off/out structural fabrications and shapes.

Application

This unit of competency been developed for engineering tradesperson - fabrication apprenticeship training and the recognition of trade-level skills in mark off/out of structural fabrications and shapes.

It applies to the marking off/out of general fabrications and shapes to specified measurements, tolerances and shapes using appropriate tools and equipment. Templates and patterns are produced as required.

Skills covered by this unit are generally applied in occupational and work situations associated with steel fabrication, boiler making or sheet metal work.

In a marine setting, it includes basic lofting/set out for construction of marine vessels and includes stem and transom development and use of tables of offsets that reflect chine and hull configuration. This includes lofting surfaces, straight edges, string lines, French curves and templates and marking out techniques apply to a range of materials and shapes.

Where more extensive lofting practices are required unit MEM09021 Interpret and produce drawings of curved 3-D shapes should also be selected.

Where marking out of general engineering components is required unit MEM12006 Mark off/out (general engineering) should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Transfer dimensions from a detail drawing to work or	2.1	Determine and understand specifications and work requirements using correct and appropriate calculations
		2.2	Carry out marking out to specifications or procedures

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	surface		using appropriate tools and equipment
		2.3	Establish datum points
3	Make templates/patterns as required	3.1	Chose appropriate template/pattern material, as required
		3.2	Produce required templates to specifications
		3.3	Follow correct storage procedures, including labelling and identification to SOPs
4	Develop patterns and/or transfer measurements to structures	4.1	Chose and apply most appropriate development and/or measurement sequence
		4.2	Determine allowances for fabrication and assembly and transfer
		4.3	Check measurement transfer/layout of components to ensure accuracy/set out
5	Interpret relevant codes, standards and symbols	5.1	Interpret relevant standards/codes and symbols
		5.2	Interpret requirements of standards/codes and apply to materials and processes
6	Estimate quantities of materials from detail drawings	6.1	Identify materials
		6.2	Estimate quantities from drawing
		6.3	Minimise material wastage

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Template materials include one (1) or more of the following:	• steel plate • perspex • timber • cardboard • paper
Storage procedures include one (1) or more of the following:	• labelling • identification (e.g. template lofts)
Allowances include one (1) or more of the following:	• thickness • bend • pitch • angle • circumference • perimeter

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM12007 Mark off/out structural fabrications and shapes (Release 1).

Release 1. Supersedes and is equivalent to MEM12007D Mark off/out structural fabrications and shapes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM12007 Mark off/out structural fabrications and shapes

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM12007 Mark off/out structural fabrications and shapes (Release 1).

Release 1. Supersedes and is equivalent to MEM12007D Mark off/out structural fabrications and shapes.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications and drawings for fabrication requirements, including materials, measurements and tolerances, joining methods, standards and code requirements
- carrying out all marking off/out using appropriate marking out tools and equipment to specifications
- calculating measurements not shown on drawings, as required
- establishing and marking datum points
- selecting appropriate template material and producing templates to specifications
- storing templates, including labelling and identification, to procedures, as required
- developing patterns by selecting and applying appropriate development and/or measurement sequence and determining correct allowances for fabrication and assembly and transferring these measurements
- calculating allowances for fabrication and assembly, including shrinkage, thickness and inside/outside measurements, and transferring these measurements
- identifying and estimating quantities of materials from drawings with minimise wastage.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- procedures for marking off/out and pattern development
- tools and equipment to be used in the preparation of the marking off/out
- datum points
- materials that can be used for the preparation of templates and their application
- manufacturing allowances that have to be considered when developing patterns

- template labelling and identification procedures and storage requirements of templates
- appropriate methods of development/marking off/out of a range of given objects
- appropriate fabrication and assembly allowances
- effects of material type and thickness on fabrication and assembly allowances
- sources of data on fabrication and assembly allowances
- relevant standards and codes and the meaning of symbols used
- requirements of the codes/standards applicable to the work to be done
- materials from which the component/assembly is to be manufactured
- benefits of minimising material wastage.

Assessment Conditions

- Assessors must:
 - have vocational competency in marking off/out structural fabrications and shapes at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM12023 Perform engineering measurements

Modification History

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Application

This unit of competency defines the skills and knowledge required to perform measurements requiring straightforward use of mechanical measuring devices which incorporate visual inspections representing units of measurement and associated calculations in a range of manufacturing, engineering and related environments. Measurements may be expressed in metric or imperial units.

Electrical/electronic devices used are those not requiring the connection or disconnection of circuitry.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 5

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements from specifications, sketches, job sheets or work instructions
2	Select appropriate device or equipment	2.1	Determine measurement requirements from specifications
		2.2	Select appropriate device or equipment to achieve required outcome according to SOPs
3	Obtain measurements using a range of measuring devices	3.1	Use correct and appropriate measuring technique
		3.2	Obtain measurements accurately in a safe and effective manner
		3.3	Determine or verify dimensions using calculations, as required
4	Maintain measuring devices	4.1	Undertake routine care and storage of devices to manufacturers' specifications or SOPs
		4.2	Make routine adjustments to devices to maintain device accuracy
5	Communicate measurements as required	5.1	Record measurements accurately, as required
		5.2	Prepare freehand sketch which depicts required information, as required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Specifications include one (1) or more of the following:

- drawings
- sketches
- job instructions
- schematics
- diagrams
- reference manuals

Measuring devices include one (1) or more of the following:

- protractors
- combination squares
- set squares
- dial indicators
- thermometers
- tapes
- rules
- micrometres
- vernier-scaled measuring equipment

Calculations include one (1) or more of the following:

- addition
- subtraction
- multiplication
- division
- fractions
- decimals

Note: Calculations may be made using a calculator

Routine adjustments

- validating the device using simple zeroing or scale adjustment

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

include the following:

Measurements include one (1) or more of the following:

- length
- squareness
- flatness
- angle
- roundness
- clearances
- any other measurements that can be read off analogue, digital or other measuring device

Information includes one (1) or more of the following:

- dimensions
- instructions
- base line
- datum points

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM12023 Perform engineering measurements

Modification History

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting measurement requirements from specifications
- selecting appropriate measuring device or equipment to achieve the required outcome
- obtaining measurements in a safe and effective manner and recording measurements, including preparing a freehand sketch which depicts required information, as required
- performing calculations to determine or verify dimensions
- storing and maintaining measuring devices including routine adjustments according to manufacturer's specifications or SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- correct application of a range of measuring devices
- correct and appropriate measuring technique for a range of measuring devices
- calculations, including addition, subtraction, multiplication, division, fractions and decimals
- manufacturer's or SOPs for handling and storing a range of measuring devices
- appropriate procedures for adjusting and zeroing a range of measuring devices, including scale adjustment
- appropriate methods of communicating measurements by drawings.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing engineering measurements at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM12024 Perform computations

Modification History

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Application

This unit of competency defines the skills and knowledge required to estimate approximate answers to arithmetical problems, carry out calculations involving percentages and proportions, and determine simple ratios and averages.

It also covers producing and interpreting simple charts and graphs in manufacturing, engineering or related environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A
Unit Weight: 3

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS)

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

requirements at all times

- 1.3 Identify job requirements from specifications, sketches, job sheets or work instructions
- 1.4 Establish required calculation outcomes from job instructions
- 1.5 Determine required calculation method to suit the application, including selection of relevant arithmetic operations and/or formulae
- 1.6 Estimate expected results, including rounding off, as appropriate

2 **Perform calculations**

- 2.1 Apply calculation method
- 2.2 Obtain answer and check against estimation to ensure it is correct

3 **Produce charts and graphs from given information**

- 3.1 Transpose data to produce charts or graphs
- 3.2 Ensure charts or graphs reflect data on which they are based to meet specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Calculations are performed using one (1) or more of the following:

- pen and paper
- a calculator
- tables
- tablets
- computers

Relevant sources include one (1) or more of the following:

- charts
- graphs
- diagrams
- measurement data
- reference manuals
- specifications

Applications include computations associated with one (1) or more of the following:

- pressure
- volume
- temperature
- heat
- speed
- power
- elasticity
- density
- mass
- force

Arithmetic operations include the following:

- application of subtraction, addition, multiplication and division
- manipulation of decimals, fractions and mixed numbers and whole numbers
- using formulas
- determining percentages
- calculation of proportions and ratios

Charts and graphs include one (1) or more of the following:

- simple histograms
- control charts
- pie charts

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM12024 Perform computations

Modification History

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting data from job instructions and relevant sources to establish required outcomes
- determining the appropriate calculation method to suit the application
- performing calculations and confirming answer/s
- producing and interpreting simple charts and graphs from given data.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- formulae applicable to the determination of perimeter, area and volume of simple geometric shapes and the reasons for using dimensions with the same units
- techniques and procedures for rounding off figures when estimating approximate answers
- features and use of mixed numbers, decimals, fractions and whole numbers
- procedures for carrying out calculations involving fractions and using each of the four basic rules of addition, subtraction, multiplication and division
- concept of percentage and procedures to be followed in converting a decimal and fraction to a percentage
- concepts and calculations of ratio and proportion
- scales applicable to the axes of the graphs or charts
- types of charts and/or graphs used in the individual's field of work
- upper and lower limits of acceptability applicable to data entered on a graph or chart
- trends indicated by the slope or gradient of a graph
- action to be taken when given trends occur or set limits are approached on graphs or charts
- procedures for drawing 'lines of best fit'
- trends indicated by the graphs or charts drawn.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing computations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivalent to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Application

This unit of competency defines the skills and knowledge required to work effectively in manufacturing and engineering work situations, including planning routine work and participating in and following work health and safety (WHS) procedures. The unit applies to working either individually or in a team situation and includes contributing to work-related group activities in a manufacturing or engineering workplace.

This unit covers WHS skills associated with carrying out routine operational activities safely and in compliance with legislative and regulatory requirements.

The unit covers the skills associated with participation in quality systems, communication and cooperation with others. The unit applies to workplaces with informal or formal quality management and improvement systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

Nil.

Competency Field

Work health and safety

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Identify goals, objectives and task requirements and clarify with appropriate persons, where required
		1.2	Prioritise task requirements
2	Review and modify plan	2.1	Adjust timelines, priorities and other planning components to respond to contingencies, as necessary
		2.2	Re-examine results of work activity against the plan and identify possible improvements to future performance of work tasks
3	Work effectively with others in the workplace	3.1	Identify own role and responsibilities and relationship to other employees, including employees performing related/interdependent activities
		3.2	Identify supervisors and other sources of advice and assistance for own work
		3.3	Apply effective interpersonal skills to interact with others and contribute to activities and objectives
		3.4	Review and modify own work progress to complement the work of others
		3.5	Report own work progress to supervisors and where required to fellow employees using standard operating procedures (SOPs)
4	Follow safe work practices	4.1	Check for and identify hazards in the work area before and during work
		4.2	Follow procedures for avoiding or controlling hazards already identified in instructions, signage or other workplace communication
		4.3	Identify and report risks and hazards not covered by procedures

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

		4.4	Select, use and maintain relevant personal protective equipment (PPE) by procedures, as required
		4.5	Recognise emergency situations and take appropriate initial emergency action
		4.6	Follow procedures for responding to emergencies
		4.7	Report incidents, injuries and other WHS non-conformances according to procedures
5	Work within a quality system	5.1	Follow instructions and procedures and perform duties in accordance with standard operating procedures or quality system requirements
		5.2	Ensure conformance of product and process to specifications
		5.3	Report defects and non-conformance to specifications according to procedures
		5.4	Participate in process improvement procedures, where required
6	Participate in workplace health and safety procedures	6.1	Identify workplace health and safety policies and procedures relevant to own work and work area
		6.2	Identify relevant WHS managers and representatives for own work area
		6.3	Provide input to minimise hazards in work area in line with organisation WHS procedures and participative arrangements

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Quality systems include one (1) or more of the following

- quality planning
- quality assurance
- quality control
- quality improvement procedures and processes

Task requirements include one (1) or more of the following:

- timeframe
- quality requirements
- outcome and performance requirements
- job history
- checks
- reporting requirements
- tools and equipment
- materials and parts
- supporting documents

Specifications include one (1) or more of the following:

- task lists
- instructions
- manufacturer manuals
- diagrams and schematics
- sketches
- parts lists
- SOPs

Planning includes one (1) or more of the following:

- preparing a plan to complete the task
- organising task into manageable steps including appropriate order and timing
- monitoring the progress of processes related to own responsibilities
- applying relevant WHS instructions
- collecting, sorting, recording results of work
- seeking advice and guidance on setting priorities and timeframes

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- seeking feedback from supervisor, trainer or mentor

Unit Mapping Information

Release 1. New unit. Supersedes and not equivalent to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivalent to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and avoiding or controlling hazards
- reporting hazards, incidents, injuries and other work health and safety (WHS) non-conformances following SOPs
- recognising and responding to emergencies following SOPs
- identifying and obtaining, instructions and information on job requirements, including one or more of the following:
 - verbal or written job instructions
 - specifications
 - SOPs
 - charts
 - lists
- identifying and responding to contingencies, including:
 - equipment breakdowns
 - non-conforming components
 - safety hazards
- recording information into proforma workplace documents, including:
 - production tally forms
 - quality control forms
 - safety incident forms
- performing assigned tasks and checking outcome of own work for conformance to specifications
- identifying own responsibilities within the workplace quality system
- giving and receiving feedback on own and group work
- seeking assistance from supervisors and mentors.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use and application of personal protective equipment
- basic quality system terminology and concept, including:
 - quality assurance
 - quality control
 - quality improvement
- procedures to be followed in performing own work
- objectives, requirements and specifications to which the individual's work is to comply
- costs and consequences of poor quality
- effective interpersonal skills:
 - effective listening
 - basic speaking skills
 - use of workplace terminology and jargon
 - giving and receiving feedback
 - checking and clarifying task-related information
 - verbal, visual and written instructions
 - appropriate modes and methods of communication
- barriers to effective communication
- sources of technical expertise/assistance
- hazards and control measures associated with workplace activities.

Assessment Conditions

- Assessors must:
 - have vocational competency in working safely and effectively in manufacturing and engineering at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills

- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM14006 Plan work activities

Modification History

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Application

This unit of competency covers the skills and knowledge required to plan familiar work activities, whilst following established procedures and work health and safety (WHS) policies and procedures of the organisation.

Planning is undertaken by the individual performing the work. Individual plan components may require modification and prioritising to meet job requirements or to respond to unforeseen circumstances.

Where computations are required to be performed unit MEM12024 Perform computations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

Competency Field

Planning

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Identify outcomes and objectives and clarify with appropriate persons
		1.3	Obtain and clarify relevant specifications and procedures
		1.4	Identify and prioritise individual components of the plan
		1.5	Select and use planning tools and techniques according to the requirements of the work
		1.6	Check the plan for accuracy and relevancy to job requirements
2	Modify plan components	2.1	Modify the plan components, as necessary, to respond to unforeseen developments
		2.2	Review the outcome of the work activity and, where necessary, identify future improvements to the plan
3	Follow WHS requirements	3.1	Comply with WHS requirements at all times
		3.2	Identify WHS hazards and risks and implement appropriate risk control measures in accordance with SOPs
		3.3	Select, use and maintain appropriate personal protective equipment (PPE) in accordance with SOPs
		3.4	Raise WHS issues with designated personnel in accordance with SOPs
		3.5	Report WHS related actions and incidents according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- Plan components include one (1) or more of the following:**
- resources
 - tools and equipment
 - materials and parts
 - overall timeframe
 - job history
 - quality requirements
 - criteria for acceptable completion
 - checks and tests
 - outcome and performance requirements
 - WHS requirements

- Specifications include one (1) or more of the following:**
- task lists
 - instructions
 - manufacturer manuals
 - diagrams and schematics
 - technical drawings and sketches
 - parts lists
 - computer records

- Planning techniques and tools include one (1) or more of the following:**
- scheduling
 - time management
 - brainstorming
 - setting goals and defined outcomes
 - prioritising
 - review and evaluation strategies

- Risk control measures**
- eliminate the hazard

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- include one (1) or more of the following:**
- substitute the hazard with a safer alternative
 - isolate the hazard
 - use engineering controls to reduce the risk
 - use training to reduce the risk
 - use PPE

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM14006 Plan work activities

Modification History

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- planning a work activity using appropriate planning tools and techniques whilst following established procedures, including work health and safety (WHS) requirements
- checking the plan to ensure accuracy and conformance and modifying the plan components, as necessary, to overcome any unforeseen difficulties or developments
- identifying hazards and implementing appropriate risk control measures and procedures
- selecting, using and maintaining relevant personal protective equipment (PPE)
- evaluating the effectiveness of risk controls measures
- providing proforma WHS reports in accordance with SOPs, as required.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of PPE
- relevant specifications
- sources of advice relating to the objectives, requirements and specifications
- timeframe for activity completion
- quality requirements of the product or service
- techniques and reasons for prioritising of each step in a plan
- modifications that can be made to the plan to respond to unforeseen developments
- risk control measures
- reporting requirements for accidents, incidents and other non-conformances with WHS procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in planning work activities in a manufacturing and engineering environment at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM16006 Organise and communicate information

Modification History

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

Application

This unit of competency covers the skills and knowledge required to access, organise and communicate information related to production, maintenance or associated processes or tasks that apply in manufacturing, engineering or related environments.

For accessing and recording of data requiring system knowledge and judgement, Unit MEM16008 Interact with computing technology should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

Competency Field

Communication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Access information	1.1	Determine information requirements of tasks and access relevant information from a range of sources
		1.2	Recognise and use workplace terminology correctly

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

2	Organise and analyse information	2.1	Interpret information and organise in accordance with work requirements
		2.2	Determine relevance and implications for immediate work requirements
3	Communicate organised information using established workplace methods	3.1	Identify purpose of communication and appropriate communication method
		3.2	Communicate information using established workplace methods

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range of sources include using one (1) or more of the following:

- job instructions
- specifications
- standard operating procedures (SOPs)
- charts
- lists
- documents
- computer data
- drawings
- sketches
- tables

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- technical manuals and/or charts
- other applicable reference material

Determining relevance of information includes one (1) or more of the following:

- checking relevance of information to own work
- selecting task relevant information from a larger document or from a diagram
- preparing an opinion based on analysis of simple facts
- expressing an opinion on the cause of faults

Workplace terminology refers to one (1) or more of the following:

- equipment
- processes
- workplace areas
- staff
- procedures

Established workplace methods include using one (1) or more of the following:

- proforma reports
- data entry
- verbal
- drawings

Purpose of communication includes one (1) or more of the following:

- simple incident/non-conformance report
- maintenance request
- production records
- material usage records
- work records
- other standard workplace records

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM16006 Organise and communicate information

Modification History

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- accessing and recording relevant information from a range of sources
- recognising and using workplace appropriate terminology
- reading, interpreting and following information in workplace documentation
- checking and clarifying information
- organising, categorising and sequencing information
- communicating using appropriate methods and procedures for a variety of situations.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- types of information relevant to the workplace and required tasks
- terminology used in the workplace relevant to own work
- available sources of information
- information analysis techniques appropriate to tasks and position
- methods of categorising and organising information including correct sequencing of information
- methods of recording and communicating information.

Assessment Conditions

- Assessors must:
 - have vocational competency in organising and communicating information at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18001 Use hand tools

Modification History

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Application

This unit of competency defines the skills and knowledge required to use a range of hand tools for a variety of general engineering applications.

This unit should not be selected if the hand tool is dedicated to a single operation or machine or when a machine-specific/customised tool is used.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Use hand tools for general engineering applications	2.1	Select hand tools appropriate to the task requirements
		2.2	Use hand tools to produce outcomes that meet job specifications
		2.3	Identify unsafe or faulty tools and mark for repair according to designated procedures before, during and after use
		2.4	Undertake routine maintenance of tools using engineering principles, tools, equipment and procedures
		2.5	Store hand tools safely in appropriate location according to procedures and manufacturers' recommendations

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Hand tools include one (1) or more of the following:

- hacksaws
- hammers
- punches
- screwdrivers
- sockets
- wrenches
- scrapers
- chisels
- gouges
- wood planes
- files of all cross-sectional shapes and types
- hand held taps and dies

Applications include one (1) or more of the following:

- adjusting
- dismantling
- assembling and finishing of items or components
- finishing, cutting, scraping of metallic and non-metallic material to size and shape
- tapping/retapping and threading/rethreading new/damaged threads

Drawings include one (1) or more of the following:

- drawings and sketches not covered by AS 1100 Technical drawing or AS 1102 Graphical symbols for electrotechnical documentation, and their equivalents
- work specifications that include graphic representations that do not require interpretation

Job specifications include one (1) or more of the following:

- finish
- tension
- size
- shape

Routine maintenance includes one (1) or more of the following:

- cleaning
- lubricating
- tightening
- simple tool repairs
- adjustments

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18001 Use hand tools

Modification History

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting and using hand tools to produce the desired outcome to job specifications
- following designated procedures for dealing with unsafe or faulty tools
- undertaking routine maintenance and cleaning of hand tools, including storage.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- features and applications of different hand tools used in a general engineering context, including hacksaws, hammers, punches, screwdrivers, sockets, wrenches, scrapers, chisels, gouges, wood planes and files of all cross-sectional shapes and sizes
- common faults and/or defects in hand tools
- procedures for marking unsafe or faulty tools for repair
- routine maintenance requirements for a range of hand tools, including lubricating, tightening, simple tool repairs and adjustments using engineering principles and relevant equipment
- storage location and procedures for a range of hand tools.

Assessment Conditions

- Assessors must:
 - have vocational competency in using hand tools at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18002 Use power tools/hand held operations

Modification History

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Application

This unit of competency defines the skills and knowledge required to use a range of hand held power tools and fixed power tools for hand held operations used in a variety of general engineering applications.

This unit should not be selected if the power tools used are dedicated to an operation or machine, e.g. nut-runner, air drill and power driver.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use hand tools is required unit MEM18001 Use hand tools should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Use power tools for general engineering applications	2.1	Select power tools appropriate to the task requirements
		2.2	Use power tools for a determined sequence of operations to produce desired outcomes to job specifications
		2.3	Identify unsafe or faulty tools and mark for repair before, during and after use according to SOPs
		2.4	Undertake operational maintenance of tools according to principles, techniques and SOPs
		2.5	Store power tools safely in appropriate location according to manufacturers' recommendations and SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Power tools include one (1) or more of the following:	• electric or pneumatic/hydraulic drills • grinders • jigsaws • nibblers • cutting saws • sanders • planers • routers • pedestal drills • pedestal grinders
Power tool operations include one (1) or more of the following:	• clamping • alignments • adjustments
Applications include one (1) or more of the following:	• loosening and fastening items or components • shaping, finishing, cutting, grinding of metallic and non-metallic materials and/or tool bits to size and shape
Drawings include one (1) or more of the following:	• drawings and sketches not covered by AS 1100 Technical drawing or AS 1102 Graphical symbols for electrotechnical documentation, and their equivalents • work specifications that include graphic representations that do not require interpretation
Clamping includes one (1) or more of the following:	• multigrips • vices • jigs and fixtures • clamps
Job specifications include one (1) or more of the following:	• finish • size • shape
Operational maintenance includes one (1) or more of the following:	• cleaning • lubricating • tightening

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18002 Use power tools/hand held operations

Modification History

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting and using a range of hand held and fixed power tools for a variety of general engineering applications
- following designated procedures for dealing with unsafe or faulty power tools
- undertaking routine maintenance and cleaning of power tools, including storage.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- features and application of different power tools
- clamping/securing methods
- adjustments/alignments to a range of power tools
- common faults and/or defects in power tools
- procedures for marking unsafe or faulty power tools for repair
- routine maintenance requirements and cleaning of a range of power tools
- storage location and procedures of a range of power tools.

Assessment Conditions

- Assessors must:
 - have vocational competency in using power tools/hand held operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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MEM18003 Use tools for precision work

Modification History

Release 1. Supersedes and is equivalent to MEM18003C Use tools for precision work

Application

This unit of competency defines the skills and knowledge required to use tools to manually produce work to precise dimensions and/or finishes.

It covers performing precision tasks on a range of metallic and non-metallic materials using a variety of tools, instruments and power equipment.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where precision measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where precision marking out is required unit MEM12006 Mark off/out (general engineering) should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM11011 Undertake manual handling

MEM12023 Perform engineering measurements

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare tools and tooling to produce precision outcome	2.1	Select processes/techniques appropriate to the precision work to be undertaken, material and specifications
		2.2	Select tools, accessories and consumables appropriate to task, specifications and material
		2.3	Prepare tools/tooling and adjust, as required
3	Use tools to produce work to precise specifications	3.1	Prepare the work piece and secure using appropriate method for selected operation
		3.2	Use tools to produce specified outcome to the required accuracy in accordance with SOPs
		3.3	Inspect tools and equipment for safe and proper working order before, during and after use
		3.4	Identify unserviceable tools, repair where appropriate, or mark for repair or disposal, according to prescribed procedure

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 3.5 Undertake inspection and maintenance of tools and equipment according to standard workplace procedures, principles and techniques
- 3.6 Store and maintain tools to ensure serviceability

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Techniques include one (1) or more of the following:

- cutting out
- drilling
- fitting
- filing
- reaming
- lapping
- broaching
- burnishing
- scraping
- polishing
- hand held grinding
- chiselling

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Precision work includes one (1) or more of the following:

- scraping machine beds to precise tolerances
- broaching a keyway
- hand reaming the bore of a spigot or bush to a positive transition fit with shaft
- core drilling (finishing) a blind hole to receive a mating pin
- lapping a mechanical seal to fine finish
- filing complex angles and mating edges
- precision grinding using a flexible drive shaft attachment

Precision outcomes include one (1) or more of the following:

- specified tolerances
- allowances
- fits
- finishes
- alignments

Tools or equipment required to achieve precision outcomes include one (1) or more of the following:

- reamers
- files
- chisels
- polishing buffs
- lapping plate
- broaches
- flat, half round and bore scrapers

Tool adjustment includes one (1) or more of the following:

- tool shape
- rake angle
- clearance angles

Inspection and preventative maintenance include one (1) or more of the following:

- visual checking of leads and connections
- sharpening of cutting equipment
- repair of associated tools

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18003C Use tools for precision work

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18003 Use tools for precision work

Modification History

Release 1. Supersedes and is equivalent to MEM18003C Use tools for precision work

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing tools for precision outcomes, including selecting processes and engineering techniques, methods and procedures appropriate to the task
- determining and making tool adjustments to produce required outcome, where applicable
- selecting and using precision tools and equipment to produce the desired outcome to meet job specifications
- following designated procedures for dealing with unsafe or faulty tools
- undertaking routine repair/operational maintenance of tools and equipment and storing in accordance with procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- work to be undertaken and specifications to be achieved
- appropriate tools, processes and equipment required to carry out the work to the required specifications and reasons and procedures for using the selected tools
- engineering principles to be applied during the use of the tools
- manufacturers' specifications of the tools and equipment selected
- procedures for checking tools and equipment for correct and safe operation
- common faults and/or defects in tools and equipment used/selected
- procedures for marking unsafe or faulty tools and equipment for repair
- repairs/operational maintenance that can be made to the tools and equipment used/selected
- procedures for repairing/maintaining the tools and equipment used/selected
- procedures for checking/storing tools and equipment used/selected prior to storage and storage location.

Assessment Conditions

- Assessors must:
 - have vocational competency in using tools for precision work at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18006 Perform precision fitting of engineering components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18006 Perform precision fitting of engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18006C Repair and fit engineering components.

Application

This unit of competency has been developed for Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trade-level skills in precision fitting and mechanical repair.

It defines the trade-level fitting skills and knowledge associated with manufacturing of new parts/components and fitting mechanical engineering components into assemblies or sub-assemblies to specifications and specified tolerances.

The skills and knowledge described by this unit are applied in occupational and work situations associated with fitting, mechanical trade and maintenance work.

Where the knowledge and skills associated with machining or welding are required, the appropriate units should also be selected.

Where additional or higher marking out skills are required unit MEM12006 Mark off/out (general engineering) should also be selected.

Where the knowledge and skills associated with the installation, removal, repair or replacement of mechanical seals is required unit MEM18012 Perform installation and removal of mechanical seals should also be selected.

Where the knowledge and skills associated with high pressure fluid power seals is required unit MEM18020 Maintain hydraulic system components should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements

MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work, health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Plan and prepare to undertake work	2.1	Assess operation and condition of components against specifications
		2.2	Identify and isolate any faulty or worn components
		2.3	Mark component parts for identification, where required

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		2.4	Determine the cause/s of faults using appropriate engineering principles, techniques, procedures, tools and equipment
		2.5	Determine repair/replacement strategy
3	Manufacture and/or repair and/or replace faulty components	3.1	Obtain parts, component and or materials from appropriate sources
		3.2	Source, repair or produce components to meet specifications
		3.3	Inspect components for compliance with specifications
4	Fit engineering components into assemblies or sub-assemblies	4.1	Determine the correct fitting requirements and sequence of assembly
		4.2	Prepare and assemble component parts using fastening equipment and methods which ensures conformance to specifications, operational performance, quality and safety
		4.3	Determine lubrication requirements by appropriate means and lubricate, where applicable
		4.4	Perform final adjustments on component assembly to meet operational specifications
5	Check operation of repaired components/unit	5.1	Check all components/unit under operational conditions for compliance to specifications
		5.2	Approve any out-of-specification modification/alterations through an appropriate authority and record
		5.3	Perform final modifications/alterations on assembly to meet operational specifications
		5.4	Commission the final assembly and return to service

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Engineering principles and fitting techniques include one (1) or more of the following:

- limits of tolerance
- allowances and clearances
- effects of wear, stress and temperature
- types of fits:
 - clearance
 - transition
 - interference
- press fitting methods
- force fits
- shrink and freeze (expansion) fits
- keyed fits
- taper fits
- lateral and radial forces
- datum and centrelines
- broaching
- drilling
- scraping
- filing
- reaming
- tapping
- threading
- simple gland top-ups in non-critical applications
- routine gland maintenance
- jointing
- gaskets

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18006 Perform precision fitting of engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18006C Repair and fit engineering components.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18006 Perform precision fitting of engineering components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18006 Perform precision fitting of engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18006C Repair and fit engineering components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- assessing engineering components visually and dimensionally with appropriate testing and measuring equipment techniques for compliance to specifications
- repairing or replacing faulty components using appropriate tools, equipment and techniques
- assembling components using appropriate fitting techniques and principles
- recording approved modifications/alterations
- inspecting final assembly to check compliance to specifications
- returning the final assembly to service in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- tools and equipment used to dismantle, repair, assemble and fit engineering components
- consequences of having non-compliant components
- types of modifications/adjustments to components being repaired/fitted
- repair methods
- sources of replacement parts
- techniques for the production of engineering components
- assembly and fitting techniques
- machine backlash/recoil
- measuring equipment
- engineering components - shafts, single and multi-throw crankshafts, cams and journals, bearings and bearing surfaces, and keys

- squareness, roundness, concentricity, flatness, straightness, surface finish and angular correctness
- purpose, selection criteria and use of gland packing, jointing or gasket materials
- types and application of lubricants
- approval processes for documenting out-of-specification modifications
- commissioning and return to service procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing precision fitting of engineering components at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies (Release 1).

Release 1. Supersedes and is equivalent to MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies.

Application

This unit of competency defines the skills and knowledge required to undertake maintenance, diagnose faults and repair drives and transmission assemblies, and undertake final adjustment and commissioning on industrial machinery.

Where levelling and alignment of machines and engineering components is required unit MEM18009 Perform precision levelling and alignment of machines and engineering components should also be selected.

MEM27028 Diagnose and rectify manual transmissions, MEM27014 Diagnose and rectify automatic transmissions and MEM27015 Diagnose and rectify drive line and final drives define the skills and knowledge applicable to mobile plant.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations

MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Undertake maintenance checks of mechanical drives and mechanical transmission components	2.1	Apply principles of mechanical drives, mechanical transmission components and the function of the main parts of the designated mechanical drive/transmission assembly to undertake maintenance checks
		2.2	Check mechanical drive/transmission components for wear, distortion, tensions, misalignment, fatigue, lubrication, slackness, tooth wear, breakages and other

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		related malfunctions using appropriate maintenance principles, techniques, tools and equipment	
		2.3	Identify assembly requiring further diagnosis, repair or adjustment and document findings
3	Adjust mechanical drives and transmission assemblies	3.1	Determine a suitable adjustment method and requirements from manufacturers' instruction sheets, standard workshop manuals/procedures or similar means
		3.2	Select adjustment tools and equipment according to the type of assembly being serviced
		3.3	Tension, align, balance or adjust drives/transmission components to manufacturers'/site specifications
		3.4	Check drive/transmission assembly after adjustment for correct operation or identify for further diagnosis or repair
		3.5	Complete service report
		3.6	Action further diagnosis or repair requirements
4	Diagnose faults	4.1	Read service reports and undertake visual and sensory inspection of the drive/transmission assembly
		4.2	Test diagnostic equipment drive/transmission assembly to manufacturers' specifications, where applicable
		4.3	Localise faults at the component level and identify for repair or replacement
		4.4	Analyse fault causes and develop preventative measures to avoid re-occurrence, document and action by appropriate means
		4.5	Action requirements for repair or replacement
5	Repair	5.1	Ascertain task requirements

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	mechanical drives/ transmission assemblies	5.2	Select tools and equipment according to the type of assembly being serviced
		5.3	Dismantle mechanical drive/transmission using appropriate maintenance principles, techniques, tools, equipment and safe workshop practices
		5.4	Repair serviceable items to manufacturers' specifications and standard workshop practices
		5.5	Select and obtain standard replaceable items from appropriate resources
		5.6	Re-fit component parts to mechanical drive/transmission assembly in accordance with manufacturers'/site specifications
6	Undertake final adjustment and commissioning	6.1	Tension, balance, align or adjust drive/transmission components to suit specifications and operational requirements
		6.2	Check drive/transmission assembly after adjustment and operational performance is analysed
		6.3	Commission assembly to specifications
		6.4	Complete service report

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Mechanical drive/transmission components include one (1) or more of the following:

- worm and worm wheel
- line shafts
- plumber blocks
- pulleys
- sprockets
- belts
- taper bush assemblies
- roller chains
- chain drives
- mechanical and hydraulic couplings
- compression couplings
- disc type flexible couplings
- spider type
- chain couplings
- universal joints
- bevel gearing
- rack and pinion gearing
- dog toothed clutches
- cone type clutches
- expanding shoe type clutches
- friction/plate type clutches
- centrifugal clutches
- toggle action linkages
- magnetic clutches
- sprag clutches
- band type brakes
- other associated drive components

Sensory inspection includes one (1) or more of the following:

- vibration
- heat
- smell
- sound
- sight

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies (Release 1).

Release 1. Supersedes and is equivalent to MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies (Release 1).

Release 1. Supersedes and is equivalent to MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists and drawings to maintain and repair mechanical drives and transmission assemblies
- undertaking diagnosis and testing of mechanical drives/transmissions components for wear, lubrication, faults and malfunctions using appropriate tools, equipment and techniques
- identifying assemblies requiring further diagnosis/repair or adjustment and document findings
- determining adjustment requirements of mechanical drives and transmission assemblies from manufacturers' specifications and manuals
- carrying out adjustments to specifications and confirming correct operation
- interpreting service reports and carrying out inspection of drive/transmission assembly visually, sensory and use of diagnostic test equipment to localise faults down to component level and identify for repair or replacement
- dismantling mechanical drive/transmission using appropriate tools and equipment, repairing serviceable items and re-fitting component parts in accordance with manufacturers'/site specifications
- analysing fault causes and developing preventive measures to avoid re-occurrence
- making final adjustments and commissioning to specifications and completing service report.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)

- uses and characteristics of lubricants
- principles of operation of a range of mechanical drives and transmissions
- techniques, tools and equipment to measure components
- common malfunctions in mechanical drives, transmissions and their components
- procedures for checking and adjusting mechanical drives, transmissions and their components
- preventative measures that can be undertaken to avoid recurrence of the fault/failure.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining and repairing mechanical drives and mechanical transmission assemblies at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18009 Perform precision levelling and alignment of machines and engineering components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18009 Perform precision levelling and alignment of machines and engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18009B Perform levelling and alignment of machines and engineering components.

Application

This unit of competency defines the skills and knowledge required to undertake levelling and alignment measurements/readings and perform levelling and/or alignment and adjustment tasks on machines and engineering components.

It applies to the setting up and use of precision levelling and alignment devices and where all adjustments are performed according to designated procedures in conformance to specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information

MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Undertake levelling and alignment measurements/readings	2.1	Determine task requirements by inspection of equipment to be levelled and/or aligned
		2.2	Select the correct appropriate levelling and/or alignment procedure
		2.3	Select correct and appropriate levelling or alignment devices/equipment and set up to procedures or manufacturers' recommendation
		2.4	Apply and utilise principles of levelling and alignment
		2.5	Take measurements/readings and record

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

3	Perform levelling and/or alignment tasks	3.1	Perform levelling realignment calculations using method appropriate for the levelling/alignment application
		3.2	Level equipment to specifications using appropriate tools, equipment and techniques
		3.3	Complete levelling and alignment task to specifications
		3.4	Complete any records required by SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Levelling and/or alignment procedures include one (1) or more of the following:

- face and rim
- reverse indicator
- use of jacking bolts and shimming material
- use of levelling equipment
- thermal expansion checks

Equipment includes one (1) or more of the following

- machines
- components
- assemblies
- sub-assemblies

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- Levelling and alignment devices/equipment include one (1) or more of the following:**
- precision levels
 - spirit levels
 - line levels
 - optical levels
 - electronic levels
 - laser levels
 - dial indicators
 - special type dial indicator fixtures
 - magnetic bases
 - straight edges
 - feeler gauges
 - bench centres
 - vee blocks
 - plumb line
 - folding wedges
 - straight edges
 - shimpack materials
 - dumpy levels

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18009 Perform precision levelling and alignment of machines and engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18009B Perform levelling and alignment of machines and engineering components.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18009 Perform precision levelling and alignment of machines and engineering components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18009 Perform precision levelling and alignment of machines and engineering components (Release 1).

Release 1. Supersedes and is equivalent to MEM18009B Perform levelling and alignment of machines and engineering components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists and drawings to perform levelling and alignment of machines and engineering components
- selecting appropriate levelling and/or alignment procedure in accordance with task requirements
- selecting appropriate levelling and alignment devices/equipment appropriate to the task
- performing levelling/alignment tasks, including levelling or alignment calculations, using appropriate tools, equipment and techniques to specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- principles of levelling and alignment
- numerical operations, geometry and calculations/formulae for levelling and alignment
- effects on equipment performance and life of non-level or out-of-alignment components
- techniques, tools, equipment and procedures to carry out the levelling and/or alignment
- reasons for selecting tools, techniques and equipment.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing levelling and alignment of machines and engineering components at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18010 Perform equipment condition monitoring and recording

Modification History

Release 1. Supersedes and is equivalent to MEM18010C Perform equipment condition monitoring and recording

Application

This unit of competency defines the skills and knowledge required to undertake condition monitoring of equipment, including recording the results.

It applies where specialist monitoring activities are undertaken as part of a preventive maintenance or total productive maintenance plan or program and monitoring is undertaken in workshop, laboratory or in situ environment.

Where only routine maintenance checking and diagnostic skills are applied see other appropriate units.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Undertake condition monitoring	2.1	Apply principles and methods of equipment condition monitoring
		2.2	Select appropriate condition monitoring technique to achieve required outcomes
		2.3	Undertake checks safely
		2.4	Plot results and report deviations from specification to appropriate authority and record

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Techniques include one (1) or more of the following:

- built-in systems (software and site displays)
- vibration monitors
- infra-red and ultraviolet non-destructive testing

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18010C Perform equipment condition monitoring and recording

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18010 Perform equipment condition monitoring and recording

Modification History

Release 1. Supersedes and is equivalent to MEM18010C Perform equipment condition monitoring and recording

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists and drawings to perform equipment condition monitoring and recording
- selecting appropriate condition monitoring device/equipment to achieve the required outcomes
- carrying out condition monitoring, plotting results and reporting deviation from specifications according to procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- application of principles and methods for a variety of situations
- appropriate records for a variety of situations.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing equipment condition monitoring and recording at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18018 Maintain pneumatic system components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18018 Maintain pneumatic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18018C Maintain pneumatic system components.

Application

This unit of competency defines the skills and knowledge required to check pneumatic system components, identify and repair or replace faulty components.

Pneumatic system components are identified and inspected and assessed using fluid power principles to predetermined specifications interpreted from data sheets and circuits diagrams.

Where straightforward removal/replacement of components from a pneumatic system is required unit MEM18055 Dismantle, replace and assemble engineering components and unit MEM18071 Connect and disconnect fluid conveying system components, should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities

MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Determine job requirements	1.1 Follow standard operating procedures (SOPs)
	1.2 Comply with work health and safety (WHS) requirements at all times
	1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs
	1.4 Identify job requirements from specifications, drawings, job sheets or work instructions
2 Check pneumatic system components	2.1 Identify the characteristics and operational function of each system component
	2.2 Inspect and test the operational function of each component
	2.3 Assess correct operation of each component against specifications
3 Identify, repair	3.1 Localise faulty system components and confirm

Elements describe the essential outcomes.

or replace faulty pneumatic system components

Performance criteria describe the performance needed to demonstrate achievement of the element.

- malfunction by inspection and testing using fluid power principles, procedures and safety requirements
- 3.2 Dismantle faulty system components and repair to manufacturers'/site specifications
- 3.3 Select replacement parts from appropriate sources
- 3.4 Reassemble system components and verify for correct operation and test against specifications
- 3.5 Confirm correct operation of the pneumatic system according to SOPs
- 3.6 Adopt appropriate follow-up procedures
- 3.7 Complete service reports

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Pneumatic system components include one (1) or more of the following:

- static and dynamic seals
- linear and semi-rotary actuators
- pressure control valves
- directional control valves
- flow control valves
- normally open and closed timers
- counters
- pneumatic motors

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- fluid conductors
- other associated equipment

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18018 Maintain pneumatic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18018C Maintain pneumatic system components.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18018 Maintain pneumatic system components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18018 Maintain pneumatic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18018C Maintain pneumatic system components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to maintain pneumatic system components
- inspecting and testing pneumatic system components to predetermined specifications using fluid power principles
- checking component parts visually and dimensionally for compliance to specification and, where appropriate, marking faulty parts for repair, replacement or adjustment
- dismantling and repairing faulty system components, including selecting replacement parts from manufacturers'/suppliers' catalogues to site or manufacturers' specifications
- assembling and testing pneumatic components for correct operation and compliance to specifications
- checking the operation of the pneumatic system for compliance to specifications
- completing service reports in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- full range of pneumatic system components and characteristics/operational function of each component
- procedures and equipment for inspecting and testing pneumatic system components
- specifications of each pneumatic system component
- faulty system components and causes of faulty components
- individual components within the pneumatic system
- procedures for repairing pneumatic system components

- procedures for checking pneumatic system operation
- follow-up procedures with respect to repaired/replaced pneumatic system components
- reporting/recording procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining pneumatic system components at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18019 Maintain pneumatic systems

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18019 Maintain pneumatic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18019B Maintain pneumatic systems.

Application

This unit of competency defines the skills and knowledge required to undertake preventive maintenance checks/adjustments on pneumatic systems, and fault-find, replace, repair or overhaul and recommission pneumatic systems.

It applies to pneumatic systems in industrial and mobile plant and equipment used in manufacturing, agricultural, forestry, mining and transport industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18018	Maintain pneumatic system components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Undertake preventative maintenance checks/adjustments on pneumatic systems	2.1	Identify system components, assemblies or sub-assemblies and prepare for inspection/preventative maintenance
		2.2	Carry out visual inspection and testing with appropriate test equipment according to fluid power principles, procedures and safety requirements
		2.3	Perform scheduled preventative maintenance tasks, including obvious repairs and adjustments, according to manufacturers' specification using fluid power techniques/practices
3	Undertake	3.1	Identify designated pneumatic system components and

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	fault-finding on pneumatic systems		carry out visual inspection of the system for the collection of fault-finding data 3.2 Consult system operator and collect additional data, where appropriate 3.3 Check maintenance reports and preventative maintenance schedules and review for additional fault-finding data 3.4 Undertake checks and tests 3.5 Identify and verify faults and malfunctions 3.6 Document or report faults and malfunctions to designated personnel using appropriate procedures
4	Repair and/or overhaul pneumatic power system	4.1 Isolate system or sub-assembly and discharge residue pressure safely in accordance with prescribed procedures or check for correct isolation 4.2 Tag isolated system or sub-assembly according to SOPs 4.3 Remove component or sub-assembly from system 4.4 Dismantle components or sub-assemblies, examine and verify for replacement, repair or overhaul 4.5 Select replacement items from appropriate sources 4.6 Rectify faulty items 4.7 Refit component or sub-assembly items to equipment and test for compliance against specifications	
5	Recommission pneumatic system	5.1 Re-commission system or sub-assembly according to prescribed procedures and specifications 5.2 Verify correct operation of the system using fluid power principles and system application techniques 5.3 Instigate appropriate follow-up procedures	

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

5.4 Update maintenance records/service reports

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Pneumatic systems include one (1) or more of the following:

- pneumatic assemblies/sub-assemblies
- stationary/mobile equipment
- pneumatic power tools

Test equipment includes one (1) or more of the following:

- leak testers
- escape rate gauges
- hand held pressure testers
- other appropriate equipment

Rectify includes one (1) or more of the following:

- replacement
- repair and/or reuse of components

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18019 Maintain pneumatic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18019B Maintain pneumatic systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18019 Maintain pneumatic systems

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18019 Maintain pneumatic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18019B Maintain pneumatic systems.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting maintenance reports and preventative maintenance schedules
- inspecting and testing pneumatic system components, assemblies or sub-assemblies and carrying out preventative maintenance tasks to predetermined specifications using fluid power principles, tools and equipment
- checking component parts visually and dimensionally for compliance to specification and, where appropriate, marking faulty parts for repair, replacement or adjustment
- consulting with system operator and carrying out visual inspection of pneumatic system and components with respect to the fault being investigated and other anomalies
- undertaking fault-finding and verifying and confirming faults/malfunctions
- isolating and depressurising system or sub-assembly, confirming and using appropriate tagging system according to SOPs
- removing, dismantling and repairing/overhauling faulty system components or sub-assembly, including selecting replacement parts from manufacturers'/suppliers' catalogues, to site or manufacturers' specifications
- assembling pneumatic components or sub-assembly for compliance to specifications, refitting items to equipment and testing for correct operation
- recommissioning pneumatic system/sub-assembly to specifications and verifying correct operation and initiating any follow-up procedures
- updating and completing maintenance records and/or service reports.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- pneumatic principles

- manufacturers' specifications and structure of common pneumatic system components and their constituent parts
- pneumatic system/component faults that can be determined by visual inspection
- application of common pneumatic system/component test equipment
- scheduled preventative maintenance tasks
- common pneumatic system and component faults and any previous faults
- any previous maintenance carried out on the pneumatic system/components
- typical checks/tests that can be carried out on pneumatic systems/components and their application
- pneumatic system/component tests and testing techniques
- apparent faults/malfunctions
- documentation/reporting requirements with respect to verified faults/malfunctions
- procedures for initiating repair and/or overhaul of the pneumatic system
- procedures for isolating and depressurising pneumatic systems
- tagging requirements for isolated systems
- appropriate repair/overhaul procedures of pneumatic components
- pneumatic system operational specifications and system recommissioning procedures
- any appropriate follow-up maintenance or operational checks
- maintenance recording/reporting requirements and consequences of inaccurate or incomplete recording/reporting of maintenance/service activities.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining pneumatic systems at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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MEM18020 Maintain hydraulic system components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18020 Maintain hydraulic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18020B Maintain hydraulic system components.

Application

This unit of competency defines the skills and knowledge required to check hydraulic system components, identify, and repair or replace faulty components.

Hydraulic system components are identified and inspected and assessed using fluid power principles to predetermined specifications interpreted from data sheets and circuits diagrams.

Where straightforward removals/replacement of components from a hydraulic system is required unit MEM18055 Dismantle, replace and assemble engineering components and unit MEM18071 Connect and disconnect fluid conveying system components, should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities

MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Determine job requirements	1.1 Follow standard operating procedures (SOPs)
	1.2 Comply with work health and safety (WHS) requirements at all times
	1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs
	1.4 Identify job requirements from specifications, drawings, job sheets or work instructions
2 Check hydraulic system components	2.1 Identify the characteristics and operational function of each system component
	2.2 Inspect and test the operational function of each component
	2.3 Assess correct operation of each component against specifications
3 Identify and	3.1 Localise faulty system components and confirm

Elements describe the essential outcomes.

repair or replace faulty hydraulic system components

Performance criteria describe the performance needed to demonstrate achievement of the element.

- malfunction by inspection and testing using fluid power principles, procedures and safety requirements
- 3.2 Dismantle faulty system components and repair to manufacturers'/site specifications
- 3.3 Select replacement parts from appropriate sources
- 3.4 Reassemble system components and test for correct operation and assessment against specifications
- 3.5 Confirm correct operation of the hydraulic system according to SOPs
- 3.6 Adopt appropriate follow-up procedures
- 3.7 Complete service reports

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Hydraulic system components include one (1) or more of the following:

- static and dynamic seals
- linear and semi-rotary actuators
- fixed and variable displacement pumps
- pressure, directional and flow control valves
- hydraulic motors
- reservoirs
- contamination control components (filtration)

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- fluid conductors/fittings
- other associated equipment

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18020 Maintain hydraulic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18020B Maintain hydraulic system components.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18020 Maintain hydraulic system components

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18020 Maintain hydraulic system components (Release 1).

Release 1. Supersedes and is equivalent to MEM18020B Maintain hydraulic system components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to maintain hydraulic system components
- inspecting and testing hydraulic system components to predetermined specifications using fluid power principles
- checking component parts visually and dimensionally for compliance to specification and, where appropriate, marking faulty parts for repair, replacement or adjustment
- dismantling and repairing faulty system components, including selecting replacement parts from manufacturers'/suppliers' catalogues, to site or manufacturers' specifications
- assembling and testing hydraulic components for correct operation and compliance to specifications
- checking the operation of the hydraulic system for compliance to specifications
- completing service reports in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- Full range of hydraulic system components characteristics/ operational function of each component
- procedures and equipment for inspecting and testing hydraulic system components
- specifications of each hydraulic system component
- faulty system components and causes of faulty components
- individual components within the hydraulic system
- procedure for repairing hydraulic system components

- procedures for checking hydraulic system operation
- follow-up procedures with respect to repaired/replaced hydraulic system components
- reporting/recording procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining hydraulic system components at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18021 Maintain hydraulic systems

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18021 Maintain hydraulic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18021B Maintain hydraulic systems.

Application

This unit of competency defines the skills and knowledge required to undertake preventive maintenance checks/adjustments on hydraulic systems, and fault-find, replace, repair or overhaul and recommission hydraulic systems.

Where the skills and knowledge required relate to mobile plant in agriculture, forestry, rail, marine and other transport operations unit MEM27017 Maintain, fault find and rectify hydraulic systems for mobile plant should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18020	Maintain hydraulic system components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Undertake preventative maintenance checks/adjustments on hydraulic systems	2.1	Identify system components, assemblies or sub-assemblies and prepare for inspection/preventative maintenance
		2.2	Carry out visual inspection and testing with appropriate test equipment according to fluid power principles, procedures and safety requirements
		2.3	Perform scheduled preventive maintenance tasks, including obvious repairs and adjustments, according to manufacturers' specifications using fluid power techniques/practices
3	Undertake fault	3.1	Identify designated hydraulic system components and

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	finding on hydraulic systems		carry out a visual inspection of the system for the collection of fault-finding data
		3.2	Consult system operator and collect additional data, where appropriate
		3.3	Check maintenance reports and preventative maintenance schedules and review for additional fault-finding data
		3.4	Undertake checks and tests
		3.5	Identify and verify faults and malfunctions
		3.6	Document or report faults and malfunctions to designated personnel using appropriate procedures
4	Repair and/or rectify hydraulic system	4.1	Isolate system or sub-assembly and discharge residue pressure safely in accordance with prescribed procedure and check for correct isolation
		4.2	Tag isolated system or sub-assembly according to SOPs
		4.3	Remove components or sub-assembly from system
		4.4	Dismantle components or sub-assemblies, examine and verify for replacement, repair or overhaul
		4.5	Select replacement items from appropriate sources
		4.6	Rectify faulty items
		4.7	Refit component or sub-assembly items to equipment and test for correct operation against specifications
5	Recommission hydraulic system	5.1	Recommission system or sub-assembly according to prescribed procedures and specifications
		5.2	Verify correct operation of the system using fluid power principles and system application techniques
		5.3	Instigate appropriate follow-up procedures

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

5.4 Update maintenance records/service reports

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Test equipment includes one (1) or more of the following:

- leak testers
- escape rate gauges
- hand held pressure testers
- other appropriate equipment

Rectify includes one (1) or more of the following:

- replacement
- repair and/or reuse of components

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18021 Maintain hydraulic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18021B Maintain hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18021 Maintain hydraulic systems

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18021 Maintain hydraulic systems (Release 1).

Release 1. Supersedes and is equivalent to MEM18021B Maintain hydraulic systems.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting maintenance reports and preventative maintenance schedules
- inspecting and testing hydraulic system components, assemblies or sub-assemblies and carrying out preventative maintenance tasks to predetermined specifications using fluid power principles, tools and equipment
- consulting with system operator and carrying out visual inspection of hydraulic system and components with respect to the fault being investigated and other anomalies
- undertaking fault-finding and verifying and confirming faults/malfunctions
- checking component parts visually and dimensionally for compliance to specification and, where appropriate, marking faulty parts for repair, replacement or adjustment
- isolating and depressurising system or sub-assembly, confirming and using appropriate tagging system according to SOPs
- removing, dismantling and repairing/overhauling faulty system components or sub-assembly, including selecting replacement parts from manufacturers'/suppliers' catalogues, to site or manufacturers' specifications
- assembling hydraulic components or sub-assembly for compliance to specifications, refitting items to equipment and testing for correct operation
- recommissioning hydraulic system/sub-assembly to specifications and verifying correct operation and initiating any follow-up procedures
- updating and completing maintenance records and/or service reports.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- hydraulic principles

- manufacturers' specifications and structure of common hydraulic system components and their constituent parts
- hydraulic system/component faults that can be determined by visual inspection
- application of common hydraulic system/component test equipment
- scheduled preventative maintenance tasks
- common hydraulic system and component faults and any previous faults
- any previous maintenance carried out on the hydraulic system/components
- typical checks/tests that can be carried out on hydraulic systems/components and their application
- hydraulic system/component tests and testing techniques
- apparent faults/malfunctions
- documentation/reporting requirements with respect to verified faults/malfunctions
- procedures for initiating repair and/or overhaul of the hydraulic system
- procedures for isolating and depressurising hydraulic systems
- tagging requirements for isolated systems
- appropriate repair/overhaul procedures of hydraulic components
- hydraulic system operational specifications and system recommissioning procedures
- any appropriate follow-up maintenance or operational checks
- maintenance recording/reporting requirements and consequences of inaccurate or incomplete recording/reporting of maintenance/service activities.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining hydraulic systems at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18022 Maintain fluid power controls

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18022 Maintain fluid power controls (Release 1).

Release 1. Supersedes and is equivalent to MEM18022B Maintain fluid power controls.

Application

This unit of competency defines the skills and knowledge required to install and repair and/or rectify fluid power controls, and adjust fluid power system control sequence and operation.

It covers fault-finding of fluid power systems control circuits, maintaining and repairing or replacing system control components, and checking and adjusting the sequence of fluid power system controls. System circuit/components are identified, traced, inspected and operational function is assessed and verified using fluid power principles to predetermined specifications interpreted from data sheets and circuit diagrams.

Where skills beyond the sequencing of programmable logic controllers (PLCs) are required unit MEM10004 Enter and change programmable controller operational parameters and unit MEM10005 Commission programmable controller programs, should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering

MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Plus, one or more of the following, including their prerequisites:

MEM18019	Maintain pneumatic systems
MEM18021	Maintain hydraulic systems

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Install/replace fluid power systems and	2.1	Interpret and apply fluid power control principles and system/circuit diagrams
		2.2	Identify system/circuit components and inspect for

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
controls		compliance with specifications	
		2.3	Undertake sequential installation according to manufacturers' specifications and SOPs
3	Check and adjust fluid power system control sequence and operation	3.1	Check controls and system operation against operational specifications using appropriate test equipment and application principles/techniques
		3.2	Perform adjustments to sequence system to meet/align to operational requirements and specifications
		3.3	Report modifications/alterations and according to SOPs
		3.4	Check controls and system operation and commission to specifications
4	Fault find fluid power systems control circuit	4.1	Interpret and apply system/circuit diagrams and data sheets
		4.2	Identify and inspect system/circuit components
		4.3	Trace system/circuit and diagnose action of components to identify and localise faults
		4.4	Test system/circuit parts using appropriate test equipment and application principles
		4.5	Assess system/circuit parts against operational specifications
		4.6	Localise fault condition at the component level
		4.7	Evaluate faulty condition, analyse root cause and plan corrective action
5	Maintain, and repair or rectify system control	5.1	Apply correct maintenance procedures
		5.2	Select and apply repair procedures using appropriate tools, equipment and techniques

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	components	5.3	Test faulty items, repair or replace using sequential installation procedures according to manufacturers' recommendations
		5.4	Select replacement items from appropriate sources
		5.5	Reassemble system control components according to specifications
6	Check and adjust sequence of fluid power system controls	6.1	Identify circuit sensors and controllers using circuit diagrams and fluid power system control principles
		6.2	Make necessary adjustments to sequence system control circuit to meet operational specification
		6.3	Check and verify correct operation of system control circuit against operational specification
		6.4	Commission fluid power system controls to specifications
		6.5	Adopt appropriate follow-up procedures
		6.6	Complete service/maintenance report

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fluid power systems control sequencing includes one (1) or more of the following:

- PLCs
- relay logic control systems
- unitised/modular sensors
- transducers
- timers
- counters
- associated equipment

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18022 Maintain fluid power controls (Release 1).

Release 1. Supersedes and is equivalent to MEM18022B Maintain fluid power controls.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18022 Maintain fluid power controls

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18022 Maintain fluid power controls (Release 1).

Release 1. Supersedes and is equivalent to MEM18022B Maintain fluid power controls.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting specifications system/circuit diagrams, system operation data sheets and control data and identifying and inspecting system components for compliance with specifications
- planning and undertaking sequential installation of fluid power systems and controls in accordance with manufacturers' specifications and procedures
- checking and adjusting control and system operation using appropriate test equipment ensuring that the sequence of operations conforms to specifications and operational requirements
- recording/reporting any modifications/alterations to the system in accordance with standard operating procedures
- fault-finding fluid power systems control circuit using fault-finding techniques and appropriate test equipment and identifying and localising components not conforming to operational specifications for repair/replacement
- repairing/replacing faulty items after testing for compliance to specifications using appropriate tools, equipment and techniques
- reassembling control components to meet specifications
- verifying correct operation of system power control circuit and commissioning the fluid power system controls to specifications
- initiating maintenance and/or service follow-up procedures and completing maintenance and/or service reports according to standard operating procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- system operational and control requirements and specifications

- application of common fluid power system components and controllers
- system/circuit components
- special installation requirements
- fluid power and common test equipment and their application
- correct operational sequence of the system
- typical adjustments to correct sequencing variations from specification
- procedures for recording/reporting modifications/alterations and consequences of not recording/reporting
- fluid power system commissioning procedures
- component(s) not complying with operational specification and typical causes of component failure
- cause of the faulty condition in the component(s) and appropriate procedures for rectifying the faulty condition
- appropriate maintenance schedule and procedures
- appropriate control component repair procedures
- typical test equipment and applications
- circuit sensors and controllers
- common adjustments that can be made to control systems and their effect
- any maintenance/service follow-up procedures
- maintenance/service recording/reporting requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining fluid power controls at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MEM18055 Dismantle, replace and assemble engineering components

Modification History

Release 1. Supersedes and is equivalent to MEM18055B Dismantle, replace and assemble engineering components

Application

This unit of competency defines the skills and knowledge required to dismantle, identify faulty components, select replacements and assemble engineering components into assemblies or sub-assemblies in accordance with standard operating procedures (SOPs).

It also applies to the straightforward removal and replacement of pre-manufactured bearings and seals.

Where precision mechanical measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where fitting techniques and principles are required to assess component condition, and/or modify components to achieve precision fits unit MEM18006 Perform precision fitting of engineering components should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 3

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering

MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Dismantle engineering components	2.1	Inspect engineering components and analyse task requirements
		2.2	Dismantle components using appropriate tools and techniques
		2.3	Mark components for identification, where required
3	Identify faulty components and select replacement parts	3.1	Obtain and interpret specifications for components from appropriate source
		3.2	Identify out-of-specification, damaged or faulty components
		3.3	Identify faulty components for repair, replacement or adjustment

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

3.4 Select replacement and/or repaired parts for reassembly

4 Assemble engineering components into assemblies or sub-assemblies

4.1 Prepare, assemble and adjust components using fastening equipment and methods using appropriate tools, equipment and techniques which ensures compliance to specifications

4.2 Select and apply lubrication, packing and sealing materials

4.3 Inspect, test and adjust final component assembly, as necessary, for compliance with operational specifications and return to use according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Engineering components include one (1) or more of the following:

- couplings
- universal joints
- pumps employing shafts
- pre-manufactured bearings and seals
- lubricants
- fasteners
- gaskets

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Appropriate tools and equipment include one (1) or more of the following:

- a range of hand and power tools
- bearing pullers
- special purpose dismantling and assembly tools

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18055B Dismantle, replace and assemble engineering components

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18055 Dismantle, replace and assemble engineering components

Modification History

Release 1. Supersedes and is equivalent to MEM18055B Dismantle, replace and assemble engineering components

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to dismantle, replace and assemble engineering components
- dismantling components using appropriate techniques, tools and equipment and marking component parts for reassembly purposes
- checking component parts visually and dimensionally for compliance to specification and marking faulty parts for repair, replacement or adjustment
- selecting replacement parts using manufacturers' catalogues and data
- assembling components using appropriate techniques and principles
- inspecting final assembly for compliance to specifications
- returning the final assembly to service in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- tasks to be performed in accordance with SOPs
- tools and equipment associated with dismantling the components
- procedures for:
 - checking components for conformance to specification and equipment required
 - assembling components and requirements of the assembly in terms of specifications, operational performance, quality and safety
 - lubricating the assembly
 - returning components/assemblies into use and checks to be undertaken during inspection of the final assembly
- specifications of the components to be replaced, including features and/or dimensions
- process of identifying replacement parts from catalogues

- packing and sealing materials.

Assessment Conditions

- Assessors must:
 - have vocational competency in dismantling, replacing and assembling engineering components at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

MSMPER200 Work in accordance with an issued permit

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER200C Work in accordance with an issued permit

Application

This unit of competency covers the skills and knowledge required to work in accordance with an issued permit. It aims to ensure that people working under a permit to work understand the system, know the limitations of the permit under which they are working and comply with all the requirements of the permit. The people to whom this unit applies may be called 'permit recipients' or 'permit holders' by some organisations. Some organisations call 'permits' 'clearances'.

This unit of competency applies to persons who are required to conduct work activities under the authority of an issued permit to work and within the context and requirements of that permit. This typically applies to all work done by maintenance staff and contractors and also to any other non-process work performed on the plant.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other team members, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Work Control Systems

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element

1	Apply for permit	1.1	Confirm the scope and location of the work to be done
		1.2	Identify the need for a work permit for the work to be carried out
		1.3	Identify the type of work permit required
		1.4	Collate information required for the issue of the permit
		1.5	Apply for the permit following the organisation's requirements
2	Identify the scope of the permit	2.1	Check that work to be done complies with the permit type
		2.2	Check that the scope and location of work comply with the permit issued
		2.3	Identify hazards and check that the hazard controls specified on the permit are consistent with the hazard analysis
		2.4	Check that preparations specified on the permit have been completed
		2.5	Sign onto/receive the permit
3	Prepare for permitted work	3.1	Maintain safe working conditions and environment by using available isolation procedures and safety equipment
		3.2	Monitor plant conditions and hazards to ensure work under the permit remains safe
		3.3	Ensure that appropriate personal protective equipment (PPE) is selected and worn, and emergency equipment is available, as required by the permit and relevant procedures
		3.4	Inspect work area to ensure safety and compliance with permit requirements and procedures

4	Work in accordance with an issued permit	4.1	Use required hazard reduction/control measures
		4.2	Comply with requirements of the permit, including safety observer if required
		4.3	Display issued permit on work site as required
		4.4	Ensure compliance with scope, location and timeframe specified in the permit.
		4.5	Seek variation to permit/new permit if job or work environment vary from that specified in the permit
		4.6	Suspend job and make worksite safe before leaving job
		4.7	Formally seek and receive authorised extensions to the permit when required
		4.8	Give end-of-day status report to permit issuer
5	Complete permit to work	5.1	Obtain new permit or have existing permit revalidated before work is recommenced
		5.2	Check the work conducted against the issued permit to ensure that all the nominated work requirements have been satisfied
		5.3	Monitor general housekeeping to ensure that the site has been left in a clean and safe condition
		5.4	Ensure personal lock outs/tag outs/isolations are removed in accordance with procedures
		5.5	Communicate status of the work conducted and the results of the permit to relevant personnel
		5.6	Complete documentation as required and have permit signed off when job is completed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework	The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following: • legislative requirements, including work health and safety (WHS) • industry codes of practice and guidelines • environmental regulations and guidelines • Australian and other standards • licence and certification requirements
Procedures	All operations must be performed in accordance with relevant procedures. Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following: • work instructions • standard operating procedures (SOPs) • safe work method statements (SWMS) • temporary instructions • any similar instructions provided
Work permits	Work permits include one or more of the following: • cold work/general permit to work • excavation • hot work • vehicle entry • minor repairs • working at heights • confined space entry • other special permits where there is an appropriate sign-off as required
Information required for	Information required for the issue of the permit includes one or more of

permit

the following:

- work description
- tools to be used
- process/methods of work/SOPs

Where hazardous materials are being used relevant material safety data sheets (MSDS) will also be required.

Hazards

Hazards include one or more of the following:

- slips and trips
- emergency equipment is unavailable
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- work where a fall by a person from one level to another is reasonably likely to cause injury
- working in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions, swarf and scrap
- spills or leaks
- extreme weather
- other hazards that might arise
- unsafe conditions developing through failure to conform with the provisions of a work permit
- hazards created by the nature or location of the work
- hazards created by the proximity of the work to other work or normal operations

Display issued

The permit holder must keep the issued permit with them on site. It must

permit

be displayed or ready to be shown as required by the site/job requirements, including one or more of the following:

- displayed in a mounting provided by the site
- accessible in a folder which is on the worksite
- carried in overall pockets in a manner which allows it to be readily shown on request

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMPER200C Work in accordance with an issued permit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMPER200 Work in accordance with an issued permit

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER200C Work in accordance with an issued permit

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria, and demonstrate the ability to:

- identify type and scope of permit relevant to the job
- interpret and implement permit conditions
- identify changes to conditions which may lead to the permit being revoked before the job is completed
- monitor hazards and hazard controls.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- different types of permits and the work they cover, including three (3) or more of:
 - cold work/general permit to work
 - excavation
 - hot work
 - vehicle entry
 - minor repairs
 - working at heights
 - confined space entry
 - other permit types as used on site
- the impact of the regulatory framework and organisation procedures under which the permit operates upon the particular job requiring the permit
- hazards associated with tasks covered by the permit and related hazard controls
- types of tests/inspections required for the issue of work permits including one (1) or more of:
 - atmospheric, oxygen/breathability
 - temperature
 - humidity
 - combustibles, oxygen, enriched or reduced
 - electricity
 - stored pressure/energy

- flammability/explosivity
- toxicity
- electricity
- stored energy/pressure.

Assessment Conditions

- Competency must be achieved before performing this work unsupervised. Therefore this unit will typically be assessed off the job. Where assessment is undertaken on the job, appropriate supervision and safety precautions must be provided.
- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:
 - should provide evidence of the ability to perform over the range of situations which might be expected to be encountered, including typical disruptions to normal, smooth work conditions
 - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
 - may use industry-based simulation particularly where safety, lack of opportunity or significant cost is an issue.
- Off-the-job assessment must sufficiently reflect realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - demonstration of skills
 - industry-based case studies/scenarios
 - ‘what ifs’.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

MSMPER205 Enter confined space

Modification History

Release 2. Adjustment to Assessment Requirements to meet industry requirements. Equivalent outcomes.

Release 1. Supersedes and is equivalent to MSAPMPER205C Enter confined space

Application

This unit of competency is required by persons who are required to enter a confined space, as defined by the Australian Standard *AS 2865-2009 Confined spaces*, or its authorised update or replacement.

This unit of competency covers the skills and knowledge required for safe entry to confined spaces under a work permit and for maintaining safety while working in the confined space. The term 'work permit' (or 'permit') includes all written authorities as defined by *AS 2865-2009 Confined spaces*. It applies to persons required to enter confined spaces for any purpose, including maintenance, cleaning, inspection or other reasons.

Work in/entry to confined spaces shall conform to relevant legislation and *AS 2865-2009 Confined spaces*, or its authorised update or replacement.

AS 2865-2009 Confined spaces defines a confined space as:

'An enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, within which there is a risk of one or more of the following:

- (a) An oxygen concentration outside the safe oxygen range.
- (b) A concentration of airborne contaminant that may cause impairment, loss of consciousness or asphyxiation.
- (c) A concentration of flammable airborne contaminant that may cause injury from fire or explosion.
- (d) Engulfment in a stored free-flowing solid or a rising level of liquid that may cause suffocation or drowning.'

Entry to a confined space is defined by *AS 2865-2009 Confined spaces* as: 'when a person's head or upper body is within the boundary of the confined space'.

NOTE: Inserting an arm for the purpose of atmospheric testing is not considered as entry to a confined space.'

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MSMPER200 Work in accordance with an issued permit

Competency Field

Work control systems

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes

Performance criteria describe the performance needed to demonstrate achievement of the element

1	Assess confined space for entry	1.1	Confirm the purpose of the required entry
		1.2	Check the documented risk assessment associated with the entry to the confined space
		1.3	Identify and assess hazards within/around the confined space
		1.4	Identify hazard controls and check they are functional and appropriate.
		1.5	Check the incident/emergency response plan is appropriate to the job
		1.6	Rehearse own role in an incident/emergency response
		1.7	Confirm and verify that the conditions of the permit reflect the risk assessment
		1.8	Ensure the confined space is ready for entry
2	Use safety	2.1	Secure the worksite

	equipment and personal protective equipment (PPE)	2.2	Select, fit and wear designated PPE
		2.3	Select, test and use required instruments and monitors
		2.4	Challenge test atmosphere/atmospheric monitoring instrument if required before entry
		2.5	Confirm test/monitoring results show entry is safe
3	Work in accordance with confined space requirements	3.1	Enter confined space safely
		3.2	Work in compliance with permit requirements
		3.3	Arrange re-authorisation/reissue of permits as required
		3.4	Complete confined space working documentation
		3.5	Maintain communications with all relevant personnel
		3.6	Monitor atmosphere within the confined space as required by the permit
		3.7	Monitor environment around the confined space for relevant changes
		3.8	Take appropriate action if there is a change in risk/work environment
4	Conclude confined space operations in accordance with procedures	4.1	Recover, clean, service and store equipment
		4.2	Complete required final documentation
		4.3	Report any issues

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements
- *AS 2865-2009 Confined spaces*

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- permit to work system
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Confined space permit

The confined space permit must meet the requirements of *AS 2865-2009 Confined spaces*, its authorised replacement or other

appropriate standard.

Conditions of the permit include:

- hazard controls
- PPE
- instruments and monitors to be used
- re-authorisation/reissue requirements
- other specifications for the work

Ready for entry

Checking the confined space is ready for entry includes checking:

- isolations are complete and appropriate
- isolation complies with regulations, standards and procedures
- atmosphere is safe (or if necessary relevant measures are in place to ensure safe entry into an unsafe atmosphere)
- safe entry and exit methods are in place
- other items to ensure compliance with procedures, permits, relevant legislation and *AS 2865-2009 Confined spaces*.

Where the confined space is not ready for entry appropriate steps must be taken, including reporting deficiencies and/or refusing to enter the space.

Secure worksite

Securing the worksite includes selecting and erecting/deploying one or more of the following:

- signs
- barriers
- other requirements as defined in the confined space entry permit requirements, *AS 2865-2009 Confined spaces* and other relevant requirements

Tools and equipment

Tools and equipment include one or more of the following:

- instruments and monitors:
- instruments used for pre-entry testing appropriate to the hazards
- continuous monitors appropriate for the hazards
- other devices used to test the confined space atmosphere
- PPE, such as:
 - eye protection

- ear protection
- gloves
- clothing
- respiratory protection
- helmets
- safety footwear
- lifelines and harnesses
- personal monitors and alarms
- other relevant PPE
- communication equipment
- voice/visual contact
- lifeline communication
- radio communication
- other relevant communication aids

Re-authorisation/reissue of permits Requirements for re-authorisation/reissue of permits are required by one or more of the following situations:

- there is any change to work scope or method
- the work situation/workplace conditions changes
- there are deviations from permit conditions
- there is a gap in work continuity
- other site rules require it

Working documentation Working documentation includes one or more of the following:

- entry/exit/re-entry logs
- other documentation required by *AS 2865-2009 Confined spaces* (e.g. Section 2.9)
- other documentation required by the permit
- other documentation required by the site

Appropriate action if there is a change in risk Where there is a change in risk/work environment appropriate action includes one or more of the following:

- seeking revalidation of the permit
- evacuating the confined space
- instigating/undertaking testing
- raising the alarm
- initiating the emergency/incident response plan
- other relevant action defined in permit conditions or site procedures

Final documentation Final documentation includes one or more of the following:

- signing-off of permit
- documentation related to equipment used
- other required records

Reporting of issues Reporting of issues includes:

- feedback about the work and methods of improving the work process
- signs and symptoms of operational stress
- equipment malfunctions
- wear and tear of equipment and tools
- condition of safety/rescue equipment
- observations about the condition of the confined space
- other issues that might arise

Hazards Hazards include one or more of the following:

- heat, smoke, dust or other atmospheric hazards
- sharp edges, protrusions or obstructions
- limited head spaces or overhangs
- equipment or product mass
- slippery surfaces, spills or leaks
- noise, rotational equipment or vibration
- high/low oxygen content
- hazardous atmospheres (e.g. combustible and toxic)
- entrapment
- engulfment
- heat stress
- claustrophobia
- external hazards that may impact on the safety of those working in the confined space (e.g. exhaust fume or other hazardous vapours being drawn into the confined space by ventilation fans)
- other hazards as identified in *AS 2865-2009 Confined spaces*
- electricity
- gases and liquids under pressure
- structural hazards/collapse
- equipment failures

- industrial (machinery, equipment and product)
- equipment or product mass
- working where there is a reasonable risk of a fall
- flammability and explosivity
- unauthorised personnel
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 2. Adjustment to Assessment Requirements to meet industry requirements.
Equivalent outcomes.

Release 1. Supersedes and is equivalent to MSAPMPER205C Enter confined space

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMPER205 Enter confined space

Modification History

Release 2. Adjustment to Assessment Requirements to meet industry requirements. Equivalent outcomes.

Release 1. Supersedes and is equivalent to MSAPMPER205C Enter confined space

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and demonstrate the ability to:

- identify hazards and apply relevant hazard controls
- undertake all checks and preparation in accordance with permit conditions and site procedures
- check that hazard controls are in place and operational
- confirm the permit conditions reflect risk assessment and confined space is ready for entry
- enter the confined space and carry out actions specified in the permit/standard procedures, including all safety procedures
- monitor the conditions of work under the permit
- interpret and respond to gas test/monitoring results
- initiate incident/emergency response plan
- select, use and maintain equipment, including:
 - instruments and monitors
 - personal protective equipment (PPE)
- use communication equipment and processes applicable to confined space work
- communicate effectively with team/work group and other personnel in the language of the workplace
- complete required workplace forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
 - work permit systems
 - safety, emergency and hazard controls
 - incident response
- hazards that may arise in relation to the confined space, including:
 - their possible causes
 - potential consequences
 - appropriate risk controls

- communication protocols relevant to confined space requirements
- tests relevant to confined space entry and the interpretation of test results, including at least one (1) of:
 - atmospheric/oxygen/breathability
 - flammability/explosivity
 - toxicity
 - temperature
 - humidity.

Assessment Conditions

- Competency must be achieved before performing this work unsupervised. Therefore this unit will typically be assessed off the job. Where assessment is undertaken on the job appropriate supervision and safety precautions must be provided.
- It is appropriate to train and assess the prerequisite unit *MSMPER200 Work in accordance with an issued permit* concurrently. It may also be appropriate to cluster other related units and deliver and assess concurrently.
- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- The collection of performance evidence will require a ‘practical assessment’ which:
 - requires entry, compliant with Section 3.4.29 of *AS 2865-2009 Confined spaces*, on more than one occasion into confined spaces which are reasonable facsimiles of an industrial confined space
 - requires the conduct of a simple task (‘work’), while within each confined space
 - requires the entry to be under a confined space entry permit, the permitting system and the permit itself to be reasonable facsimiles of industrial permits and systems
 - requires the person to undertake all checks and complete all documentation that is required for the confined space entry.
- The confined space used should be a reasonable facsimile of an industrial confined space. The use of breathing apparatus and black out goggles is not required for this unit.
- Assessment must sufficiently reflect realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.

- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

NWPCAD002 Control vegetation on a site

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to control vegetation on a site.

It includes inspecting, identifying and treating weeds, plants and shrubs. It also includes safe handling of chemicals and equipment and the ability to plan and work safely.

This unit applies to those working as field and operational staff involved in plant control but does not reflect the requirements for undertaking plant control on properties of third parties where further training and licensing requirements may apply. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications and plans

1.2 Identify noxious weeds, plants and shrubs

	1.3	Inspect site to prevent damage to utilities, environment and adjoining land
	1.4	Identify potential hazards according to workplace procedures
	1.5	Select and check equipment and tools to meet task and safety requirements
	1.6	Select, fit and use personal protective equipment
2	Treat vegetation	
	2.1	Store, handle and transport chemicals according to safety procedures
	2.2	Use processes to treat vegetation according to workplace procedures
	2.3	Implement controls to minimise environmental damage and deal with emergencies
	2.4	Calculate dosing rates and mix chemicals according to workplace procedures
	2.5	Conduct monitoring programs to determine spread, growth rate and extent of problem caused by weeds
	2.6	Clean equipment after use and prepare for safe storage according to manufacturer instructions and workplace procedures
	2.7	Dispose of waste according to workplace procedures
3	Complete records and reports	
	3.1	Record use of chemicals and control mechanisms according to workplace procedures
	3.2	Complete and process work reports according to workplace procedures
	3.3	Identify and report observations outside defined parameters to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU002 Control vegetation on a site.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD002 Control vegetation on a site

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying workplace procedures
- controlling vegetation by treating weeds, plants and shrubs either mechanically or chemically
- dealing with chemical spillages
- following plans and job specifications
- identifying and reporting operational problems
- identifying noxious weeds and appropriate control methods
- identifying risks and implementing controls
- interpreting safety data sheets
- interpreting work requirements from given documentation
- performing work-related calculations
- planning and preparing equipment and materials required for work
- producing reports and completing relevant documentation
- restoring worksite
- using personal protective equipment, tools and machinery, chemicals and other treatments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- control systems
- effects of weather and conditions on use of chemical treatment
- emergency response scenarios
- environmental aspects of controlling vegetation
- equipment operation, capacity and limitations
- landscape and ground structure of work area
- materials handling
- mechanical and chemical control of weeds plants and shrubs
- noxious weeds, plants and shrubs

- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk factors and potential hazards of vegetation control processes
- use, storage, handling and transport of chemicals

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPCAD004 Maintain catchment and surrounding areas

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to maintain catchment and surrounding areas.

It includes maintaining surface catchment areas and associated rivers, lakes, water bodies, dams, water storages and groundwater areas whilst contributing to the maintenance of water quality, protection of the environment and public. It also includes maintaining environmental conditions, undertaking maintenance and reporting outcomes.

This unit applies to those working as field staff with specific responsibility for maintaining catchment and surrounding areas and contributing to catchment management and control. Those undertaking this unit would work under appropriate supervision either independently or in a team, while performing routine tasks in range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Access and review catchment records describing

- maintenance requirements for action
- 1.2 Identify and follow work requirements and timelines for performing maintenance tasks of catchments and surrounding areas
 - 1.3 Assess site, equipment and methods for risks and apply appropriate control measures
 - 1.4 Plan maintenance work to be conducted within required timeframe, using allocated resources
- 2 Maintain environmental condition of waterways and surrounding areas**
- 2.1 Remove and dispose of dead livestock or native fauna from waterways and surrounding catchments
 - 2.2 Remove flood debris from waterways and surrounding areas according to workplace procedures
 - 2.3 Carry out fuel reduction burns according to workplace procedures
 - 2.4 Apply control measures to contain or control chemical spills or contaminated water supplies
 - 2.5 Identify and report potential or emerging changes to environmental conditions to relevant personnel
 - 2.6 Identify procedures for responding to emergencies and providing security to the catchment area
- 3 Eradicate noxious weeds and feral pests**
- 3.1 Identify and report noxious weeds and feral pests contributing to degradation of catchment and surrounding areas to relevant personnel
 - 3.2 Organise for the removal of noxious weeds and feral pests
 - 3.3 Identify and report observations outside defined parameters to relevant personnel for further action
 - 3.4 Compile reports on eradication process and submit to relevant personnel
 - 3.5 Monitor and report activities within the catchment area to relevant personnel
- 4 Perform maintenance within catchment area**
- 4.1 Identify and inspect infrastructure requiring minor maintenance

- 4.2 Apply erosion control measures for waterways and surrounding areas
- 4.3 Make repairs using appropriate tools, equipment and resources according to workplace procedures
- 4.4 Record and report maintenance performed to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU011 Maintain catchment and surrounding areas.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD004 Maintain catchment and surrounding areas

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- compiling reports
- controlling pests
- identifying and responding to maintenance problems
- inspecting catchment and surrounds
- interpreting work requirements
- monitoring and reporting environmental conditions
- performing minor maintenance tasks
- removing debris, noxious weeds

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- catchment emergency response and catchment security procedures
- effects of weather and conditions on operation of site or plant
- environmental, landscape and ground structure of work area
- flood debris
- illegal activities including:
 - camping
 - illegal crops
 - logging
 - mining
 - off-road vehicles
 - shooting
- infrastructure including:
 - bridges
 - culverts
 - drains

- fences
- flow recording stations
- gates
- recording stations
- relevant legislation, regulations and workplace procedures
- risk factors and potential hazards of surface water systems

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPCAD008 Monitor and control dam operations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and control dam operations.

It includes preparing for and implementing dam operation plans and inspecting and testing dam emergency backup equipment.

This unit applies to those working as field and operational staff with a specific responsibility for the operation of dams. Those undertaking this unit would work under appropriate supervision while performing routine tasks in a limited range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for dam operation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Identify and apply relevant workplace procedures, guidelines and regulatory requirements for dam operation

1.2 Schedule and prioritise operational activities and obtain

		relevant approval
	1.3	Notify relevant stakeholders of operational plans
2 Implement dam operations	2.1	Follow dam operation plan and procedures
	2.2	Inspect, operate and test isolating and regulating equipment
	2.3	Test and record dam standby and emergency backup equipment
3 Compile and process operation reports	3.1	Collect operational data from measurement instruments, inspections and relevant personnel
	3.2	Process, evaluate, validate, record and store operational data
	3.3	Record and report structural, material and/or equipment problems and recommend remedial action to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU022 Monitor and control dam operations.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD008 Monitor and control dam operations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- collecting and analysing operational information
- conducting inspections
- identifying safety hazards
- interpreting plans, drawings, instructions, standard operating procedures, policies and standards
- interpreting technical documentation
- operating dam's equipment
- preparing required reports
- scheduling and implementing operational activities
- using equipment, tools, machinery and personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- control systems
- dam access issues
- dam operation and maintenance procedures
- dam safety emergency operations and equipment
- dam security issues
- effects of weather and conditions on assets
- environmental aspects of operation
- equipment operation
- lock out procedures for mechanical and electrical installations
- operational risks to dams
- principles of hydraulics
- relevant legislation, regulations and workplace procedures
- stakeholder communication

- system layout

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPCAD009 Monitor and implement dam maintenance

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and implement dam maintenance.

It includes maintaining dam safety mechanisms, interpreting technical documentation, investigating and resolving maintenance problems, collecting and analysing technical information.

This unit applies to those working as field and operational staff with a specific responsibility for the maintenance of dams. Those undertaking this unit would work under appropriate supervision while performing routine tasks in a limited range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for dam maintenance

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Prepare for dam maintenance according to workplace procedures and operational requirements

	1.2	Inspect dam and develop a maintenance plan according to workplace procedures
2 Implement dam maintenance plans	2.1	Schedule dam maintenance works and communicate with relevant personnel
	2.2	Maintain civil and mechanical dam assets according to workplace procedures
	2.3	Operate and test equipment relevant to dam maintenance
3 Compile maintenance and inspection reports	3.1	Collect required data from inspections, measurement instruments and relevant personnel
	3.2	Collate, process, evaluate, validate, record and store data according to workplace procedures
	3.3	Record and report structural, material and/or equipment problems and recommend remedial action to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU023 Monitor and implement dam maintenance.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD009 Monitor and implement dam maintenance

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- analysing and processing data
- collecting and evaluating technical information
- conducting inspections
- coordinating maintenance activities
- identifying and correcting maintenance problems
- identifying security and access maintenance issues
- inspecting and operating relevant equipment and instruments
- interpreting plans, drawings, instructions, workplace procedures, policies and standards
- interpreting technical documentation
- monitoring and implementing dam maintenance
- performing or coordinating maintenance on at least one of the following types of dams and associated equipment:
 - concrete
 - embankment
- preparing required reports
- proposing and justifying maintenance activities
- using relevant tools and machinery
- using safety, rescue and personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- concrete structure, strengths and deterioration
- control systems
- dam construction procedures
- dam design principles
- dam failure and safety mechanisms

- dam maintenance principles and practices
- effects of weather and conditions on assets
- environmental aspects of maintenance
- equipment operation including:
 - flow control devices
 - lifting equipment
- hazardous materials handling
- historic dam information
- lock out procedures for mechanical and electrical installations
- maintenance procedures
- materials science
- principles of hydraulics
- principles of soil mechanics
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk factors and potential hazards of maintenance of dam assets
- system layout

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPCAD012 Route floods through storages

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to route floods through storages.

It includes managing and conducting surveillance of catchment run-off through dams and other water storage assets, operating flow control infrastructure and ancillary equipment for dam/storage operations and flood routing.

This unit applies to those working as field and operational staff with a specific responsibility for the operation of dams and other water storage assets. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a familiar context, ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Monitor flow and flood routing

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Monitor catchment behaviour during normal and flood conditions according to workplace procedures

	1.2	Determine outflows and inflows using standard flow rate calculations
	1.3	Determine flow control settings based on flow rate calculations and rating tables
2 Prepare for dam or storage operation	2.1	Conduct inspections of dams and relevant assets during floods
	2.2	Develop a hydrograph template for each new event according to workplace procedures
	2.3	Conduct risk assessment and identify hazards
3 Implement dam or water storage operation plans	3.1	Apply operation plans according to workplace procedures
	3.2	Provide flood warnings according to workplace procedures
	3.3	Inspect and test plant and equipment
	3.4	Test, assess and document safety mechanisms
4 Regulate flows	4.1	Plot flood data on hydrograph template according to workplace procedures
	4.2	Regulate flow control mechanisms to maintain safety of asset and required system supply and flood routing
	4.3	Produce data relating to flood performance and report to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU027 Route floods through storages.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD012 Route floods through storages

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- calculating flow rates including:
 - inflow
 - outflow
 - rate of change of storage volume
- collecting and analysing data and technical information
- conducting inspections
- identifying and investigating operational problems
- identifying hazards and conducting a risk assessment
- interpreting and plotting hydrographs
- interpreting plans, drawings, instructions, standard operating procedures, policies and standards
- managing and conducting surveillance of catchment run-off through dams and other water storage assets
- operating controls and ancillary equipment
- operating flow control infrastructure and ancillary equipment
- preparing required reports
- using equipment and instruments
- using safety equipment and personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- communication systems relating to data acquisition and flood warnings
- control systems
- dam and storage operation principles
- effects of water and catchment conditions on flow expectations
- effects of weather and conditions on dams and storages

- environmental and social impacts of flood operations
- equipment operation
- hazardous materials handling
- impacts of errors in site measurements on flow calculations
- impact of floods on physical properties of infrastructure
- interrogation of catchment monitoring equipment
- operation of flood gates, valves or other plant
- organisational and statutory requirements
- principles of dam surveillance
- principles of hydraulics through dams
- properties of stored water and energy, wave action and standing waves
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk management techniques
- system hydraulics
- system layout
- water flow measurement

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPCAD019 Monitor and operate groundwater extraction

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate groundwater extraction.

It includes monitoring the extraction of water from waterways and water bodies and reporting risks, compliance and complaints. It also includes operating pumps and meters, monitoring availability and quality of supply, controlling water flows from the source and applying legislative and workplace requirements.

This unit applies to field staff with responsibility for ensuring water extraction complies with water use legislation. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Interpret relevant legislation, workplace procedures and requirements

	1.2	Locate bore sites from plans and job specifications
	1.3	Schedule and plan inspection of bore asset and communicate with appropriate personnel
	1.4	Select, check and prepare equipment to monitor water extraction
	1.5	Conduct a risk assessment of bore operations and determine control measures
2	Monitor and operate groundwater extraction systems	
	2.1	Monitor designated locations within groundwater source area according to agreed schedule
	2.2	Conduct inspection of bore assets, take meter readings and for water depth
	2.3	Calculate recharge and extraction rates
	2.4	Collect samples and conduct standard tests according to workplace procedures
	2.5	Adjust pump flows to meet customer orders
	2.6	Identify breaches according to legislation and workplace procedures
3	Identify and report risks, breaches and complaints	
	3.1	Identify risks to stakeholders and environment
	3.2	Identify and report breaches according to workplace procedures
	3.3	Investigate and report complaints from the stakeholders regarding water allocation and quality

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU051 Monitor and operate groundwater extraction.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPCAD019 Monitor and operate groundwater extraction

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- adjusting pump flows
- calculating recharge and extraction rates
- collecting samples
- conducting risk assessment
- identifying and preventing well contamination
- inspecting bore assets
- interpreting plans, instructions and standard operating procedures
- reading levels and meters

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- characteristics of groundwater and aquifer
- characteristics of groundwater systems
- effects of weather and conditions on operation of site or plant
- methods for investigating and reporting complaints
- risk factors and potential hazards of groundwater source systems
- relevant legislation, regulations and workplace procedures
- system hydraulics and flushing
- system layout
- types of bore construction and principles
- water extraction equipment including operation, capacity and limitations
- well contaminants

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPGEN020 Sample and test source or drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to sample and test source or drinking water.

It includes preparing for and conducting worksite source and treated water quality sampling and testing. It also includes reporting abnormal findings and finalising work. This unit does not include off-site laboratory testing.

This unit applies to those working in field operations in various industries. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for water quality sampling and testing

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from standard operation procedures

1.2 Confirm and record samples, locations and tests to

- comply with requirements
- 1.3** Select and check relevant equipment and tools to meet tasks and safety requirements
 - 1.4** Select and apply relevant sample preservation methods
 - 1.5** Select, fit and use personal protective equipment according to workplace procedures
 - 1.6** Limit hazards and contamination to protect self, work area and environment
- 2 Conduct water quality sampling and testing**
- 2.1** Apply chain of custody principles according to workplace procedures
 - 2.2** Collect samples ensuring types, locations, times and labels comply with requirements and workplace procedures
 - 2.3** Prepare samples for off-site laboratory testing according to requirements
 - 2.4** Maintain integrity of samples during sampling and onsite testing
 - 2.5** Conduct worksite water quality tests according to workplace procedures and record results
 - 2.6** Assess and report abnormal characteristics to relevant personnel
- 3 Finalise work**
- 3.1** Clear and restore work area
 - 3.2** Report observations or measurements requiring further action to relevant personnel
 - 3.3** Dispose of samples, clean and store test equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN007 Sample and test drinking water.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPGEN020 Sample and test source or drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assessing risks
- calibrating worksite testing equipment
- collecting samples from at least one of the following:
 - source water
 - treated water
- disposing of waste and spent samples
- following sampling and testing procedures
- performing at least three of the following types of worksite tests on the collected samples:
 - chlorine
 - colour
 - dissolved oxygen
 - electrical conductivity
 - pH
 - temperature
 - turbidity
- planning and preparing for water sampling tasks
- preparing, checking and using equipment
- preparing, collecting, labelling and preserving water samples
- recording all required information

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- abnormal characteristics of water samples and test results
- chain of custody
- effects of weather and conditions on work
- hazards associated with collection of water samples

- maintenance and storage of reagents
- range and purpose of on worksite water quality testing and sampling
- requirements for maintaining sample integrity
- sample types for the following tests:
 - chemical
 - microbial
 - physical
 - radiological
- water sample preparation
- workplace policies and procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
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NWPGEN021 Sample and test wastewater

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to sample and test wastewater.

It includes preparing for and conducting wastewater sampling and testing and finalising work. It also includes collecting and preparing wastewater samples and performing wastewater tests. This unit does not include off-site laboratory testing.

This unit applies to those working in field operations in industries. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for wastewater sampling and testing

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from standard operating procedures

1.2 Confirm and record samples, locations and tests to

- comply with requirements
- 1.3** Select and check and relevant equipment and tools to meet tasks and safety requirements
 - 1.4** Select and apply relevant sample preservation methods
 - 1.5** Select, fit and use personal protective equipment according to workplace procedures
- 2 Conduct wastewater sampling and testing**
- 2.1** Apply chain of custody principles according to workplace procedures
 - 2.2** Collect samples ensuring types, locations, times and labels comply with requirements and workplace procedures
 - 2.3** Prepare samples for off-site laboratory testing according to requirements
 - 2.4** Maintain integrity of samples during sampling and worksite testing
 - 2.5** Conduct worksite wastewater quality tests according to workplace procedures and record results
 - 2.6** Assess and report abnormal characteristics to relevant personnel
- 3 Finalise work**
- 3.1** Clear and restore work area according to workplace procedures
 - 3.2** Report observations or measurements requiring further action to relevant personnel
 - 3.3** Dispose of samples, clean and store test equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN008 Sample and test wastewater.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPGEN021 Sample and test wastewater

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assessing risks
- calibrating worksite testing equipment
- collecting samples from at least one of the following:
 - effluents
 - raw wastewater
 - reclaimed water
 - sludges
- disposing of waste and spent samples
- following sampling and testing procedures
- performing at least three of the following types of worksite tests on the collected samples:
 - dissolved oxygen
 - electrical conductivity
 - foaming
 - microscopic observations
 - odours
 - pH
 - redox potential
 - settleability
 - sludge blanket depth
 - temperature
 - visual observations
- planning and preparing for wastewater sampling tasks
- preparing, checking and using equipment
- preparing, collecting, labelling and preserving wastewater samples
- recording all required information

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- abnormal characteristics of wastewater samples and test results
- chain of custody
- effects of weather and conditions on work
- hazards associated with collection of wastewater samples
- maintenance and storage of reagents
- range and purpose of worksite wastewater testing and sampling
- requirements for maintaining sample integrity
- sample collection methods:
 - composite
 - grab
- sample types for the following tests:
 - chemical
 - microbial
 - physical
- wastewater sample preparation
- workplace policies and procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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NWPGEN023 Use maps, plans, drawings and details

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to use maps, plans, drawings and details.

It includes reading and interpreting maps, plans, drawings and specifications and recording and advising on changes and errors.

This unit applies to those using maps, plans and drawings in industry. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Interpret maps, plans, drawings and specifications

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Identify and locate maps, plans, drawings and specifications required to complete work tasks

1.2 Interpret commonly used symbols and abbreviations

		according to the drawing standards
	1.3	Interpret, apply and verify the latest version and functions of the legend
	1.4	Identify natural and constructed features on maps, plans and drawings
	1.5	Identify specifications to maps, plans and drawings
2	Use maps, plans and drawings	
	2.1	Implement technical data according to workplace procedures
	2.2	Use scales to calculate distances using maps and plans
	2.3	Confirm orientation, boundaries and identified features of the worksite
	2.4	Identify any errors in the maps, plans, drawings and specifications and report to relevant personnel
3	Record and advise on changes and errors	
	3.1	Amend a map or plan according to workplace procedures
	3.2	Take measurements and record features on a map or drawing
	3.3	Record and report amendments to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN011 Use maps, plans, drawings and specifications.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPGEN023 Use maps, plans, drawings and details

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- adjusting a map or plan representing an actual or simulated work environment including the following:
 - constructed features
 - natural features
 - symbols
- identifying errors in maps, plans, drawings and specifications locating maps, plans, drawings and specifications for work tasks
- locating worksites and boundaries
- using information provided in maps, plans and drawings to complete a task

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- features of maps, plans and drawings including:
 - contours
 - datum points
 - dimensions
 - gradients
 - constructed
 - natural
 - planes
 - sections
 - symbols
 - terminology
- formulas of volumes, area and mass
- range of maps, plans and drawings to different assignment situations
- relevant legislation, regulations and workplace procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

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NWPGEN027 Monitor and operate pump stations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate pump stations.

It includes pump stations in water and wastewater systems, undertaking minor maintenance or organising more complex maintenance. It also includes gland adjusting, packing replacement and replacing fittings.

This unit applies to staff with specific responsibility for ensuring pump stations operate according to workplace procedures. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a familiar context, ensuring minimal damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine pump station work requirements from standard operating and maintenance procedures

	1.2	Perform worksite inspection to prevent damage to other utilities and the environment
	1.3	Select and check equipment and tools to meet task and safety requirements
	1.4	Select, fit and use personal protective equipment according to workplace procedures
	1.5	Handle, use and store chemicals according to safety data sheet and workplace procedures
2	Operate pump stations	
	2.1	Identify and set or adjust pump station components
	2.2	Perform routine security inspections and cleaning duties according to workplace procedures
	2.3	Operate pump station according to manufacturer instructions
3	Maintain pump stations	
	3.1	Inspect pump station components, identify maintenance needs and report to relevant personnel
	3.2	Schedule maintenance tasks, order appropriate materials and conduct maintenance tasks according to maintenance schedule
	3.3	Identify and report pump station faults and perform minor repairs
4	Monitor and adjust pump station performance	
	4.1	Apply pump station performance targets
	4.2	Identify and apply monitoring points and timing
	4.3	Monitor pump station and adjust to maintain operational parameters
	4.4	Identify and report observations outside defined parameters to relevant personnel for further action
5	Check outsourced maintenance work	
	5.1	Check completed maintenance and repairs meet specifications
	5.2	Return pumping station to service
6	Finalise work	
	6.1	Check, maintain and store equipment, tools and materials and report defects to relevant personnel

- 6.2 Restore worksite according to environmental and workplace procedures
- 6.3 Maintain workplace records according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU054 Monitor and operate pump stations.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPGEN027 Monitor and operate pump stations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- checking quality of outsourced maintenance work
- collecting data
- conducting a security inspection
- finalising work, including completing documentation
- following plans and instructions
- identifying system faults, operational problems and hazards
- maintaining workplace records
- monitoring and adjusting pump station performance
- operating and maintaining pumps and pumping stations
- operating service
- planning and preparing for work, including selecting equipment and chemicals
- producing reports and logs
- responding to operational problems
- using safety and personal protective equipment
- using tools, equipment and machinery.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- control systems
- effects of weather and conditions on system including lightning strikes
- environmental aspects of operation
- equipment operation, capacity and limitations
- hazardous materials handling
- high and low voltage requirements
- lock-out procedures for mechanical and electrical installations
- principles affecting selection of pump station monitoring points and timing of monitoring

activities

- principles and purpose of pump operation
- pump and pump station operation and maintenance procedures and standards
- pump station components
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk factors and potential hazards of operating wastewater transfer systems
- system hydraulics including suction and lift
- system layout
- types of pump and their operational function
- work, health and safety (WHS) requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

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NWPNET019 Prepare and restore worksite

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to prepare and restore worksite.

It includes following work instructions, using a range of equipment and tools to prepare a safe worksite and restoring worksite to the required condition.

This unit applies to those working as field and operational staff performing a wide range of functions and supporting construction, maintenance and operations processes. Those undertaking this unit would work under appropriate supervision, performing routine tasks, in mostly familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Identify and report potential hazards to public and environment and assess risks

1.2 Determine worksite preparation requirements from

- specifications, instructions and pre-work inspections
- 1.3** Perform a worksite check according to legislative and organisational requirements to identify risks and prevent damage to other utilities
 - 1.4** Source and check worksite equipment, tools and materials as appropriate to meet task and safety specifications
 - 1.5** Select, fit and use personal protective equipment
 - 1.6** Identify, notify and communicate with customers and stakeholders according to workplace procedures
- 2 Prepare worksite**
- 2.1** Position safety equipment and materials to prevent potential risks to public and environment
 - 2.2** Store and secure equipment and materials according to workplace procedures
 - 2.3** Use worksite equipment, excavation equipment, tools and materials according to manufacturer instructions and workplace procedures
 - 2.4** Drain and divert water flows from worksite to prevent damage to environment
- 3 Restore worksite**
- 3.1** Backfill and compact excavations according to specifications
 - 3.2** Restore worksite by landscaping, planting and materials
 - 3.3** Remove excess soil, debris and unwanted materials from worksite according to workplace procedures
 - 3.4** Restore worksite using equipment, tools and materials to meet environmental and workplace procedures
- 4 Review and report activities**
- 4.1** Tag and report faulty equipment, tools and advise appropriate personnel
 - 4.2** Store equipment, tools and materials according to manufacturer and workplace instructions
 - 4.3** Complete and process workplace records according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET002 Prepare and restore work site.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPNET019 Prepare and restore worksite

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- cleaning, maintaining and storing equipment
- clearing and preparing worksite according to specifications
- communicating with appropriate environmental controls
- compacting and reinstating worksite
- excavating backfill
- identifying and responding to worksite issues
- interpreting and applying numerical data in specifications and plans
- interpreting plans, instructions, workplace procedures and work requirements
- planning worksite layout
- preparing worksite for planting and plant vegetation
- selecting, using, maintaining, cleaning, storing and securing materials and equipment
- using tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- communication systems
- effects of weather and conditions on construction worksite or plant
- environmental aspects of worksite preparation and restoration
- equipment operation, capacity and limitations
- excavation procedures and worksite restoration
- landscape and ground structure of work area
- relevant legislation, industry standards and guidelines
- relevant utilities and service bodies
- relevant workplace procedures
- risk factors and potential hazards of worksite preparation and restoration

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPNET040 Maintain and repair network assets for wastewater

Modification History

Release 2. Alteration to PE item 9, removal of PE item 12 and alteration to KE point 15.

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair network assets for wastewater.

It includes conducting maintenance and repair on a variety of wastewater distribution assets including pipes, drains and wastewater collection assets. It also includes reviewing, reporting and recording work.

This unit applies to those working as field staff with specific responsibility for ensuring repair and maintenance of wastewater assets is completed in a safe and timely manner. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a familiar context, and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for work	1.1 Conduct risk assessment for environmental and safety factors to ensure worksite is safe to work 1.2 Determine work requirements, materials and configuration from plans, specifications, instructions and workplace procedures 1.3 Check coordination issues with relevant personnel, including isolations, licences and permits to work 1.4 Identify networks system operation requirements 1.5 Identify, notify and communicate with customers according to workplace procedures 1.6 Select, fit and use personal protective equipment (PPE)
2 Conduct maintenance and repairs	2.1 Isolate infrastructure according to workplace procedures 2.2 Determine appropriate repair method from job specifications and instructions 2.3 Check maintenance and repairs to assets to ensure specifications are met according to workplace procedures 2.4 Restore worksite according to environmental and workplace procedures including performing calculations
3 Review and report work	3.1 Tag and report faulty equipment and tools and advise appropriate personnel 3.2 Store equipment, tools and materials according to manufacturer and workplace instructions

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET023 Maintain and repair network assets for wastewater.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPNET040 Maintain and repair network assets for wastewater

Modification History

Release 2. Alteration to PE item 9, removal of PE item 12 and alteration to KE point 15.

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assisting with planning worksite including personnel, equipment and materials
- checking permits, approvals, other utilities diagrams and maps with relevant personnel
- communicating with appropriate personnel and customers
- conducting risk assessment on worksite for safety and environmental factors
- determining location, size, utilities, services from plans, specifications and workplace procedures
- identifying and responding to operational problems including main, connection chokes, pump stations and faults
- interpreting plans, instructions and procedures
- maintaining and repairing assets by:
 - maintaining pump stations
 - repairing access chambers
 - undertaking excavation
- maintaining, repairing and replacing wastewater infrastructure including at least 5 of the following:
 - clearing blockages
 - controlling flows in gravity networks
 - installing connections
 - installing pipes and fittings
 - jet cleaning
 - jet foaming
 - locating and repairing chokes
 - making joints
 - measuring and cutting pipes
 - repairing valves
 - selecting and placing bedding and backfill material
 - undertaking closed-circuit television (CCTV) inspection

- undertaking excavation
- performing work-related calculations
- preserving personal safety
- selecting and applying appropriate PPE
- using tools and equipment for work in wastewater

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- causes of blockages including:
 - foreign objects
 - pipe displacements
 - roots intrusion
- characteristics of pipes and fittings
- concrete placement techniques including compaction
- control system procedures
- effects of weather and conditions on construction site or plant
- environmental, health aspects and impacts
- equipment operation, capacity and limitations
- excavation techniques and requirements
- formwork preparation and positioning
- ground support systems
- infiltration of foreign matter into the wastewater system
- landscape and ground structure of work area
- lockout procedures
- pipe systems and installation requirements
- relevant legislation, regulations, policies and procedures
- relevant utilities and service bodies to identify allocation of road reserve
- risk factors and potential hazards of maintenance processes
- safety data sheets
- system hydraulics
- testing and sampling systems
- work drawings, plans, specifications and instructions

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPNET051 Monitor and operate water distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

It includes coordinating the operation of bulkwater or water distribution systems and measuring and reporting on the operation of the system. It also includes interpreting technical documentation, identifying and investigating operational problems and collecting and analysing technical information.

This unit applies to those working as field staff and operators with a specific responsibility for inspecting and measuring the performance of bulkwater or water distribution systems and for ensuring that flow, pressure and volume parameters are regulated according to organisational specifications and system demands. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a familiar context, and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Monitor system performance and usage	1.1	Select and check equipment and tools required for monitoring system performance
	1.2	Schedule and conduct routine inspections and report identified faults to relevant personnel
	1.3	Collect, analyse and report system performance and usage data
	1.4	Monitor and coordinate sample collection and records according to workplace procedures
2 Regulate flow, pressure and volume	2.1	Inspect and adjust flow regulating systems according to performance measures
	2.2	Monitor and adjust pressures and volumes
	2.3	Monitor flows and diversions required for repair
3 Operate and control distribution processes	3.1	Control distribution processes to maintain required parameters of operation
	3.2	Identify, address and report process faults to relevant personnel
	3.3	Optimise process performance according to workplace procedures
4 Compile process reports	4.1	Compile reports from system data according to workplace procedures
	4.2	Record the condition of equipment and report faults or anticipated problems to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET041 Monitor and operate water distribution systems.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPNET051 Monitor and operate water distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- analysing and reporting system performance data
- collecting and analysing technical information
- completing relevant work documentation
- conducting routine inspections
- controlling system operations
- identifying and investigating operational problems
- identifying and reporting control system faults
- interpreting a range of technical documentation
- meeting organisational standards for optimising water distribution performance
- monitoring and coordinating the operation of bulkwater and water distribution systems
- responding to and correcting operational problems

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- chemical use requirements
- control systems
- coordination and control of processes
- effects of weather and conditions on operation of bulkwater and water distribution systems
- environmental aspects of bulkwater and water distribution systems
- equipment operation
- forces including gravitational, valve operation, hydraulic and pumps
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk management principles
- types of pipes and fittings

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPTRT005 Monitor and operate water treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate water treatment processes.

It includes reporting on water treatment plant system performance and processing quality control. It also includes operating water treatment processes, and complying with relevant legislation, regulations and guidelines.

This unit applies to operational staff in water treatment plants with responsibility for the practical and safe operation of plant, equipment and processes. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, within a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications and plans

	1.2	Select and check equipment required to meet safety requirements of task and worksite
	1.3	Select, fit and use required safety equipment, including personal protective equipment (PPE)
2 Monitor and operate treatment processes	2.1	Inspect plant according to workplace procedures
	2.2	Collect process samples and conduct standard tests according to workplace procedures
	2.3	Operate treatment processes according to workplace procedures
	2.4	Perform adjustments to enhance system performance
3 Complete documentation	3.1	Collect, record and complete process data according to workplace procedures
	3.2	Identify and report observations outside defined parameters to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT001 Operate and control water treatment processes.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT005 Monitor and operate water treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying workplace procedures
- collecting and labelling samples
- collecting and recording data
- completing documentation
- conducting routine plant inspections
- performing disinfection processes
- performing water treatment separation processes
- preparing and applying chemical dosing.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- demands and uses of water, both domestic and industrial
- interpreting safety data sheets
- physical, chemical and microbiological characteristics of water
- post-treatment processes
- pre-treatment processes
- reasons for water treatment
- relevant legislation, regulations and workplace procedures
- relevant technologies for operating and controlling water treatment processes
- relevant water treatment guidelines and standards
- risk factors and potential hazards associated with the operation of water treatment processes
- risk management principles
- sources of water
- types of chemicals and water chemistry
- types of treatment plants and processes
- water and chemical principles

- water cycle.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPTRT006 Monitor and operate fluoride addition processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate fluoride addition processes.

It includes preparing for fluoridation processes, applying fluoride dosing and reporting on water quality control.

This unit applies to those working as water operators responsible for fluoridation processes in water treatment. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications and plans

1.2 Select and check equipment required to meet safety

- requirements of task and worksite
- 1.3 Select, fit and use required safety equipment, including personal protective equipment (PPE)
 - 1.4 Handle and store fluoridation chemicals according to workplace procedures
- 2 Monitor processes**
- 2.1 Monitor fluoridation processes according to workplace procedures
 - 2.2 Collect samples and conduct process tests according to workplace procedures
 - 2.3 Perform calculations and make process adjustments to maintain effectiveness of fluoride according to workplace procedures
 - 2.4 Monitor the parameter set points for critical control points and operational control points
- 3 Apply fluoride dosing**
- 3.1 Prepare and apply fluoridation chemicals according to workplace procedures
 - 3.2 Control fluoride dosing to maintain required fluoride concentration
 - 3.3 Maintain information relating to fluoride supply and usage according to workplace procedures
- 4 Complete documentation**
- 4.1 Collect, record and complete process data according to workplace procedures and process requirements
 - 4.2 Identify data outside of normal operational parameters to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT012 Operate and control fluoride addition process.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT006 Monitor and operate fluoride addition processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- calculating average fluoride concentrations
- collecting and reporting process data
- collecting process samples and determining fluoride residuals
- completing documentation
- determining work requirements
- identifying and reporting control system faults and operational problems
- identifying and reporting hazards
- interpreting and following safety data sheets (SDS)
- performing fluoride chemical dosing calculations
- preparing and applying fluoride dosing safely
- selecting and using appropriate tools and equipment, including personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- automatic feed rate control systems
- fluoride addition points
- fluoride dosing processes and calculations
- fluoride sampling and record keeping
- fluoride system layout
- policies and workplace procedures for fluoride processes
- properties of fluoridation chemicals
- relationship of fluoridation to public health
- relevant legislation, regulations and workplace procedures
- risk factors and potential hazards associated with fluoridation
- safe handling of fluoride compounds with reference to safety data sheets

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPTRT022 Monitor and operate hypochlorite disinfection processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate hypochlorite disinfection processes.

It includes monitoring hypochlorite disinfection systems and reporting on process quality control. It also includes working safely with, transporting and storing sodium hypochlorite solution or calcium hypochlorite solids and implementing emergency response procedures.

This unit applies to operational staff with specific responsibility for hypochlorite disinfection systems in water or wastewater treatment plants. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications

- and plans
- 1.2 Select and check equipment and hypochlorite supplies to meet safety requirements of task and worksite
 - 1.3 Select, fit and use required safety equipment, including personal protective equipment (PPE)
 - 1.4 Handle and store hypochlorite chemicals to maximise shelf life and reduce loss of available chlorine
 - 1.5 Conduct the percentage available chlorine test according to workplace procedures
- 2 Monitor processes**
- 2.1 Monitor hypochlorite disinfection processes according to workplace procedures
 - 2.2 Collect process samples and conduct standard tests according to workplace procedures
 - 2.3 Make process adjustments to maintain effectiveness of hypochlorite disinfection
 - 2.4 Monitor the parameter set points for critical control points and operational control points
- 3 Apply chemical dosing**
- 3.1 Prepare and apply hypochlorite chemicals
 - 3.2 Control hypochlorite dosing to maintain required chlorine residual
- 4 Complete documentation**
- 4.1 Maintain information relating to hypochlorite supply and usage
 - 4.2 Collect, record and complete process data according to workplace procedures and process requirements
 - 4.3 Identify data outside of normal operational parameters and report to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT052 Operate and control hypochlorite disinfection processes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT022 Monitor and operate hypochlorite disinfection processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- collecting and reporting process data
- identifying and responding to process faults
- identifying hazards
- interpreting and following safety data sheets
- monitoring, operating and reporting on hypochlorite disinfection systems
- performing at least one of the following concentration tests:
 - calcium hypochlorite
 - sodium hypochlorite solution
- performing chlorine residual sampling and testing
- performing process calculations including at least one of the following:
 - Ct calculation dosage
 - feed rate
- preparing and applying hypochlorite dosing safely
- selecting and using appropriate tools and equipment, including personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- automatic feed rate control systems
- breakpoint
- chlorine demands including:
 - ammonia
 - iron, manganese and nitrite
 - natural organic matter (NOM)
 - turbidity
- contact time
- disinfection by-products (DBP)

- effects of pH, time, temperature, UV exposure and impurities on hypochlorite breakdown
- hypochlorite dosing system layout for sodium hypochlorite or calcium hypochlorite dosing systems
- impact of pH
- microbiological guidelines
- properties and chemistry of hypochlorite chemicals
- reactions with water to produce hypochlorous acid/hypochlorite ion
- relevant legislation, regulations and workplace procedures
- risk factors and potential hazards associated with hypo chlorination
- safety data sheets

Assessment Conditions

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
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Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPTRT027 Monitor and operate wastewater treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to operate and control wastewater processes. It includes monitoring and operating wastewater treatment plants, reporting system performance and process quality control. It also includes ensuring wastewater disposal or re-use meets state or territory legislative requirements.

This unit applies to operational staff in wastewater treatment plants with responsibility for the practical and safe operation of plant, equipment and processes. Those undertaking this unit would work under appropriate supervision, performing routine tasks within a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications and plans

	1.2	Select and check equipment required to meet safety requirements task and worksite
	1.3	Select, fit and use required safety equipment including, personal protective equipment (PPE)
2 Monitor treatment processes	2.1	Inspect plant according to workplace procedures
	2.2	Collect process samples and conduct standard tests according to workplace procedures
	2.3	Operate wastewater treatment processes according to workplace procedures
	2.4	Perform adjustments to enhance system performance
3 Complete documentation	3.1	Collect, record and complete process data according to workplace procedures and process requirements
	3.2	Identify, data outside of operational parameters and report to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT061 Operate and control wastewater processes.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT027 Monitor and operate wastewater treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying workplace procedures
- completing documentation
- conducting routine plant inspections
- operating and adjusting at least one of the following processes:
 - primary treatment
 - secondary treatment
 - tertiary treatment
 - solids management
- taking samples and performing standard tests

Knowledge Evidence

- chemical and biological principles of wastewater treatment
- hydraulics and organic loading in wastewater plants
- physical, chemical and microbiological characteristics of wastewater treatment
- preliminary treatment, primary treatment, secondary treatment, tertiary treatment and solids management
- reasons for wastewater treatment
- relevant workplace procedures, guidelines and industry standards
- state or territory legislative requirements for wastewater treatment processes
- risk factors and potential hazards relating to wastewater treatment
- sources of wastewater
- types of components
- water cycle

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Companion Volume implementation guides are found in VETNet -
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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

NWPTRT047 Monitor, operate and control lagoon processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor, operate and control lagoon processes.

It includes measuring and reporting on system performance and process quality control, monitoring and operating wastewater lagoon processes and reporting on system performance.

This unit applies to operational staff with a specific responsibility for wastewater lagoons in treatment plants. Those undertaking this unit would work under appropriate supervision, performing routine tasks within a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications and plans

1.2 Select and check equipment required to meet safety

		requirements of task and worksite
	1.3	Select, fit and use required safety equipment, including personal protective equipment (PPE)
2 Monitor lagoon processes	2.1	Inspect plant according to workplace procedures
	2.2	Collect process samples and conduct standard tests according to workplace procedures
	2.3	Prepare samples for offsite testing
3 Operate and control lagoon processes	3.1	Operate lagoon processes according to workplace procedures
	3.2	Perform adjustments or maintenance to enhance process performance
	3.3	Collect, record and communicate process data
	3.4	Identify and report observations outside defined parameters to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT101 Operate and control lagoon processes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT047 Monitor, operate and control lagoon processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- collecting and labelling samples
- collecting and recording data
- completing required documentation
- identifying and reporting process faults
- making process adjustments
- monitoring, operating and reporting on lagoon processes
- taking samples and performing onsite tests including:
 - dissolved oxygen
 - pH
 - temperature

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- communication processes
- features and components of wastewater lagoon systems
- flow measurement
- operational problems
- plant layout
- principles of lagoon wastewater treatment
- recirculation principles
- relevant legislation, regulations and workplace procedures
- risk factors and potential hazards relating to wastewater lagoon systems
- types of lagoon processes including:
 - aerated
 - anaerobic
 - facultative

- maturation
- sludge

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

PUAFER008 Confine small emergencies in a facility

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Application

This unit of competency involves the skills and knowledge required to confine small emergencies in a facility and it applies to occupants who are required to have first attack firefighting skills. It includes preparing for emergency situations, identifying and assessing an emergency, safely confining emergencies, using initial response equipment and reporting on the facility's emergency response.

Small emergencies in a facility include incidents such as small fires that can be controlled using a fire extinguisher; chemical spills that can be controlled using facility personal protective clothing and equipment and a spill kit; or a vehicle accident where there is no significant injury or damage.

The unit has been developed to cover the facilities as specified in Australian Standard (AS) 3745 and AS4083. For this unit, as covered by AS3745 and/or AS4083, occupants are people attending a facility on a permanent or temporary basis such as an employee, contractor, student or resident, but not a visitor or patient and a facility is a building, structure or workplace that is, or may be, occupied by people (occupants).

All aspects of the unit must be undertaken in line with legislative requirements, organisational policies and procedures, and accepted safe work practices.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Facility Emergency Response

Unit Sector

Public Safety

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for emergency situations	1.1	Possible facility emergency situations and responses are identified by the occupant
	1.2	Emergency resources are identified and their location is ascertained
	1.3	Problems with emergency resources are identified and reported to relevant personnel, in accordance with the facility emergency plan
2 Identify and assess emergency	2.1	Hazards are identified and effectiveness of initial response actions are assessed
	2.2	Advice in relation to the emergency is sought, in accordance with the facility emergency plan
	2.3	Where initial response actions are considered unsafe or inappropriate action is taken to discontinue, in accordance with the facility emergency plan
3 Safely confine emergencies	3.1	Facility emergency is confined to the immediate area, in accordance with facility emergency response procedures
	3.2	Emergency resources are used, in accordance with facility emergency response procedures and safe work practices
	3.3	Emergency resources are used, in accordance with facility emergency response procedures
4 Use initial response equipment	4.1	Initial response equipment is checked to ensure its serviceability prior to use
	4.2	Equipment is selected and used in response to the facility emergency
	4.3	Use of equipment is coordinated with other emergency actions, in accordance with the facility emergency plan
5 Report facility emergency response	5.1	Emergency and response is documented and reported, in accordance with the facility emergency plan
	5.2	Use of initial response equipment is documented and

reported, in accordance with the facility emergency plan

- 5.3** Initial response equipment is marked or positioned after use, in accordance with the facility emergency plan and a report to relevant personnel is completed to indicate if any equipment requires servicing and/or replacing

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to PUAWER008B Confine small facility emergencies.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

Assessment Requirements for PUAFER008 Confine small emergencies in a facility

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
- communicating with occupants, emergency personnel and stakeholders
- complying with facility policies and procedures
- confining emergencies safely
- giving and following instructions
- identifying and acting to avoid or control any associated hazards
- identifying and assessing an emergency
- implementing facility emergency response procedures
- preparing for emergency situations
- reporting facility emergency response
- restowing initial response equipment
- using initial response equipment
- utilising risk management processes

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of

- actions to be followed when initial response action is not safe
- facilities and equipment that may be used safely to confine emergencies
- facility emergency plan and emergency response procedures
- initial response actions including activation of response team, activation of suppression systems, use of alerts, containment of emergency, evacuation of area, removal of occupants from danger, removal of emergency, basic aid, shut down procedures, use of containment systems and use of portable fire extinguishers, fire blankets and/or hose reels
- kinds of emergency resources
- legislation, industry standards, codes of practice and regulations
- limitations of initial response equipment, emergency control equipment or facilities

- methods of extinguishment
- organisational/facility documentation, policies and procedures
- possible hazards types of emergencies
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) including risk mitigation

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in industry approved simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to

- a range of relevant activities, exercises, case studies and/or simulations
 - reflective of a range of emergency situations that may be expected in a facility
- relevant and appropriate materials, equipment, tools and personal protective clothing and equipment currently used in industry
- applicable documentation including organisational policies, facility emergency plan and emergency response procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

PUASAR022 Participate in a rescue operation

Modification History

Release 2. Updated superseded HLT Pre-requisite unit.

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Application

Typically, personnel performing these roles have completed induction or recruitment training and are commencing work as a member of an operational team. They will work under supervision in a team but may be responsible for completing singular tasks relating to a rescue.

It is applicable to personnel from the emergency services, volunteer organisations and/or associated industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

The fire sector is those sections of government departments, statutory authorities or organisations that have responsibility under jurisdictional arrangements for the delivery of firefighting and fire management services.

It is essential that the prerequisite units listed below are obtained prior to the issuance of this unit to individuals within the fire sector or the units contributing to the attainment of a fire qualification.

HLTAID011 Provide First Aid

Competency Field

Search and Rescue

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare and respond to rescue

- 1.1** Rescue operation and task information is received through a briefing, in accordance with organisational procedures
- 1.2** Rescue equipment is identified and selected based on incident information, as directed by the supervisor
- 1.3** Personal protective clothing and equipment is selected based on the nature of the rescue operation
- 1.4** Any further details on the nature of the rescue are received en route and acted on, in accordance with organisational procedures
- 1.5** Anticipated hazards and associated risks are discussed with rescue team members while on approach to rescue operation

2 Contribute to a risk assessment at the scene

- 2.1** Rescue scene assessment is conducted, and hazards and risks identified at the scene are reported to the supervisor
- 2.2** Communication with other team members is maintained using appropriate methods, techniques and terminology
- 2.3** Hazards and environmental conditions are minimised and/or controlled using risk mitigation processes, as directed
- 2.4** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) and security procedures are followed, in accordance with organisational policies and relevant legislation
- 2.5** Need for additional personnel and/or specialist equipment is reported to the supervisor
- 2.6** Casualties at scene are identified, reported to supervisor and action is taken, as directed

3 Perform rescue

- 3.1** Access to incident and/or casualties is gained using techniques and equipment, in accordance with organisational procedures
- 3.2** Rescue procedures are conducted, in accordance with organisational procedures and supervisor's instructions

	3.3	Casualties are prepared for removal and extricated safely using appropriate equipment, rescue techniques and procedures, whilst under the direction of appropriately trained personnel
	3.4	Incident scene is constantly monitored for hazards to prevent injury to self and/or others and reports are provided to the supervisor, as required
	3.5	Hygiene precautions are implemented, in accordance with organisational requirements
4 Conclude rescue operations	4.1	Appropriate actions are taken to preserve the incident scene, in accordance with organisational procedures
	4.2	Equipment is recovered, cleaned and serviced, in accordance with organisational procedures and manufacturers' guidelines
	4.3	Hygiene precautions are implemented, in accordance with organisational procedures
	4.4	Decontamination procedures are followed, in accordance with organisational procedures
	4.5	Operational debriefing is participated in, in accordance with organisational procedures
	4.6	Operational documentation including post incident reports is completed, in accordance with organisational procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

rescue operation must include at least one or more of the following	• confined spaces rescue • flood rescue • industrial rescue

rescue equipment must include at least one or more of the following

- road crash rescue
- search and rescue
- swift water rescue
- trench rescue
- vertical rescue
- fire extinguishers
- glass management kit
- hand tools
- ladders
- lighting equipment
- powered tools (battery, electric and fuel) such as
 - air bags
 - chain saws
 - cutting tools
 - drills
 - excavating tools
 - hydraulic tools
 - pneumatic equipment
 - winches
- rescue vehicles
- ropes
- stretchers
- tarpaulins

Unit Mapping Information

This unit replaces and is equivalent to PUASAR022A Participate in a rescue operation.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

Assessment Requirements for PUASAR022 Participate in a rescue operation

Modification History

Release 2. Updated superseded HLT Pre-requisite unit.

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least one occasion and includes

- applying safe work practices in rescue operations
- applying Work, Health and Safety (WHS)/Organisational Health and Safety (OHS) requirements
- completing organisational documentation which can include incident reports, notebooks and logbooks
- concluding rescue operations
- contributing to a risk assessment at the scene
- following organisational policies and procedures
- identifying and monitoring hazards
- identifying, recording, preparing and extricating casualties
- identifying, selecting and using rescue equipment
- implementing hygiene precautions
- implementing risk mitigation processes
- implementing security procedures
- participating in and contributing to briefings and debriefings
- performing rescues
- preparing and responding to rescue
- preserving evidence at scene
- recognising types of hazards including situational and environmental hazards including adverse weather, insufficient light, difficult terrain, heights and still and moving bodies of water, damaged utilities and infrastructure including electricity, gas, water, rubble and debris, hazardous materials and atmospheres and mobile hazards including traffic and wild and domestic animals
- removing, cleaning and maintaining equipment
- reporting injuries and accidents to relevant personnel
- responding and reacting to instructions in a safe, correct and timely manner
- selecting and wearing personal protective clothing and equipment

- undertaking rescue scene assessment and monitoring
- using communication methods, techniques and terminology

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of

- capabilities and limitations of rescue equipment
- casualty handling techniques
- communication methods and techniques including signals and signs
- hygiene precautions including avoiding contact with body fluids, washing hands and wearing protective clothing
- manual handling techniques
- organisational documentation which may include incident report, notebook and logbook
- organisational policies and procedures
- personal protective clothing and equipment
- personnel roles and responsibilities including other trained personnel that may support a rescue operation
- procedures for reporting injuries and accidents
- processes and procedures for briefings and debriefings
- ropes and knots
- trained personnel
- types of environmental hazards
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including risk mitigation and safe work practices

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in organisationally approved simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or simulations

- relevant and appropriate materials, equipment, tools and personal protective clothing and equipment used in industry
- applicable documentation including organisational procedures, industry standards, equipment specifications, regulations, codes of practice and operations manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

PUASAR032 Undertake vertical rescue

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Application

This unit of competency involves the skills and knowledge required to undertake vertical rescues in a range of emergency situations in natural and manmade environments. It includes a range of vertical rescue situations, preparing and responding to rescue situations, assessing rescue scenes, establishing vertical rescue systems and performing in and terminating rescues.

The unit is applicable to personnel from the emergency services, volunteer organisations and associated industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

PUASAR022 Participate in a rescue operation

Competency Field

Search and Rescue

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare and respond to vertical rescue

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Operation and task information is received through a briefing, in accordance with organisational procedures
- 1.2** Vertical rescue equipment is selected based on incident information and is checked to ensure it is ready for use

	1.3	Personal protective clothing and equipment for vertical rescue is selected
2 Assess scene	2.1	Scene reconnaissance is conducted, and results are reported to relevant personnel
	2.2	Location and condition of casualties is determined
	2.3	Vertical rescue scene management procedures are followed, in accordance with organisational procedures
	2.4	Physical and environmental features of scene are assessed before deploying rescue resources
	2.5	Risk assessment is conducted, in accordance with organisational procedures
	2.6	Access is controlled, and a safe and effective operational environment is maintained
	2.7	Communication with other personnel on site is established and maintained including team and safety briefings relevant to tasks
3 Establish vertical rescue system	3.1	Vertical rescue system is conducted as appropriate to incident
	3.2	Vertical rescue system and anchors are established, checked and monitored
	3.3	Equipment is prepared, and appropriate techniques are used, in accordance with organisational procedures
4 Perform vertical rescue	4.1	Hygiene precautions are maintained, in accordance with organisational procedures
	4.2	Access is gained to casualties or trapped persons using vertical rescue techniques and equipment, in accordance with organisational procedures
	4.3	Casualties or trapped persons are secured and prepared for removal in consultation with medical personnel
	4.4	Casualties are removed using vertical rescue techniques and equipment whilst preventing further injury
	4.5	Appropriate actions are taken to preserve incident scene, in accordance with organisational procedures

5 Terminate vertical rescue operations	5.1 Equipment is recovered, cleaned and serviced, in accordance with organisational procedures and manufacturers' guidelines
	5.2 Hygiene precautions are implemented, in accordance with organisational procedures
	5.3 Decontamination procedures are followed, in accordance with organisational procedures
	5.4 Operational debriefing is participated in, in accordance organisational procedure
	5.5 Operational documentation including post incident report is completed, in accordance with organisational procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to PUASAR032A Undertake vertical rescue.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

Assessment Requirements for PUASAR032 Undertake vertical rescue

Modification History

Release 1. This is the first release of this unit of competency in the PUA Public Safety Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes

- applying hygiene precautions
- applying organisational policies and procedures including following scene management procedures, implementing decontamination procedures and scene preservation and management procedures
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including safe work practices
- assessing a scene
- assessing, treating and packaging casualties
- checking and maintaining vertical rescue equipment
- communicating with team members and casualties
- completing organisational documentation
- concluding vertical rescue operations
- conducting risk assessment
- determining and establishing a vertical rescue system appropriate to the type of incident including selecting and using vertical rescue techniques and equipment
- establishing safe systems to gain access to and recover casualties
- extricating casualties safely and minimising further injury or discomfort to self and others
- managing edge protection and equipment
- participating in and contributing to briefings and debriefings
- performing vertical rescues and securing and removing casualties
- preparing and responding to vertical rescue situations
- securing and removing casualties
- undertaking scene assessment and reporting on this
- using industrial fall arrest systems and devices
- using personal protective clothing and rescue equipment
- using stretchers in raising and lowering operations
- working in a team

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of

- casualty assessment and packaging
- conditions determining vertical rescue techniques including type of vertical rescue incident and organisational procedures
- field notes, logbook and post incident reporting requirements
- hygiene precautions
- industrial fall arrest systems and devices including harnesses, stretchers and packaging
- operational briefing processes and procedures including collecting information on operation, location, information about access and egress routes and team roles such as team leader, safety officer, technicians and command, control and coordination arrangements
- organisational documentation, policies and procedures
- physical and environmental features including weather and environmental conditions; plant machinery; utilities and services; structural elements; hazardous atmospheres; exposed, unprotected and sharp edges; natural, manmade and physical environmental features
- preservation of incident scene must include disturbing only to gain access or make scene safe and not disturbing fatality scenes until police investigation activities are completed
- principles of suspension trauma
- procedures for operating vertical rescue equipment
- processes and procedures for debriefings
- rescue scene assessment
- rescue scene management procedures including establishing and monitoring safety zones, establishing barriers and perimeter access controls, liaising with media and managing bystanders
- safety factors including safe working loads and breaking strains of vertical rescue equipment
- sources of information including personnel on scene and the public
- vertical rescue and safety systems including anchors, ascending and descending devices, edge management devices, edge protection, karabiners, lighting, pulleys, rescue ropes and tapes to industry standards
- vertical rescue equipment characteristics and limitations
- voice, whistle and other communication systems
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including risk mitigation and safe work practices

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of

assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in organisationally approved simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, rescue tools, rescue and communications equipment and personal protective clothing and equipment currently used in industry including
 - an appropriate venue for vertical rescue activities
 - vertical rescue equipment and personnel for team based activities
- applicable documentation including organisational procedures, industry standards, equipment specifications, regulations, codes of practice and operations manuals.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

RIIHAN309F Conduct telescopic materials handler operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to conduct telescopic materials handler operations.

This unit applies to those working in site-based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Coal mining

Extractive

Metalliferous mining

Drilling

Civil Infrastructure

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for telescopic materials handler operations	1.1 Access, interpret and apply telescopic materials handler documentation 1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	activities 1.5 Identify, obtain and apply signage requirements in line with workplace procedures 1.6 Select required telescopic materials handler equipment or attachments and confirm the suitability of the work activities 1.7 Coordinate and communicate planned activities with other at the site prior to commencement of work activity
2. Operate telescopic materials handler in line with established requirements	2.1 Perform pre-start and start-up check in line with workplace procedures 2.2 Check telescopic materials handler controls, brakes, attachments and other implements for manoeuvrability and serviceability and ensure faults are rectified or reported within scope of own responsibility and according to workplace procedures 2.3 Assess site and operating hazards and apply safe operating techniques 2.4 Operate telescopic materials handler using techniques suited to equipment capabilities, site and work conditions, and according to workplace procedures
3. Attach, secure, lift, carry and place materials to complete work activity	3.1 Use load handling communication methods as per standard operating procedures with all parties 3.2 Communicate with dogman to establish the weight of the load 3.3 Communicate with dogman to ensure safe working load requirements have been assessed and appropriate slings and lifting gear has been selected, attached and secured in line with workplace procedures 3.4 Locate machinery to ensure stable and effective shift of materials according to work requirements 3.5 Shift the load safely and effectively, using hand, audible and communication signals, in line with workplace procedures 3.6 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
4. Select, remove, fit and use attachments for a telescopic materials handler	4.1 Select attachment for the task and move and fit attachment in line with workplace procedures 4.2 Test and confirm correct fitting and operation 4.3 Use attachment within design limits and in accordance with

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	workplace procedures 4.4 Remove, clean and store attachment in line with workplace procedures
5. Relocate the telescopic materials handler	5.1 Prepare machine and equipment for relocation in line with safe work practices 5.2 Transport machine and equipment safely between worksites, observing relevant site codes and traffic management requirements
6. Conduct housekeeping activities	6.1 Clean-up work area and dispose or recycle materials according to workplace procedures. 6.2 Manage and/or report hazards to maintain a safe working environment 6.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIHAN309F Conduct telescopic materials handler operations (Release	RIIHAN309E Conduct telescopic materials handler operations (Release 1)	Minor updates to reflect changes to operator maintenance and relocation	Equivalent

1)		activities, and assessment conditions for attachments.	

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIHAN309F Conduct telescopic materials handler operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of telescope materials handler operations that safely, effectively and efficiently follow workplace procedures to carry out work activity on at least two occasions, and include:

- performing pre-start, start-up and shutdown procedures
- checking controls, brakes and attachments for manoeuvrability and serviceability and rectifying or reporting faults
- operating the telescopic materials handler
- attaching and securing appropriate lifting gear
- shifting the load
- selecting, fitting, testing, using and removing attachments, which must be certified and approved in line with workplace procedures
- transporting the machine and equipment between work sites
- parking and securing equipment

In the course of the above the candidate must also:

- locate and apply required documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- apply safe work practices, identifying and reporting potential hazards and environmental issues, and assess risks
- access, interpret and apply technical information
- apply fault finding techniques
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with telescopic materials handler operations

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for telescopic materials handler operations, including those relating to:

- isolation and traffic control responsibilities and authorities
- safety data sheet and hazardous materials handling methods
- development and compliance with job safety analyses and safe work method statement
- maintenance and basic diagnostic
- recyclable materials
- housekeeping activities
- environmental management plan

Key factors affecting work activities described in performance evidence above, including:

- telescopic materials handler types, characteristics, technical capabilities and limitations
- calculating safe working loads
- methods of changing machine attachments
- safe operating techniques in varying terrain
- telescopic materials handler and attachment operating techniques

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - telescopic materials handler
 - attachments
 - personal protective equipment
- be conducted in a safe environment and,
- be assessed in context of this sector's work environment and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed and
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided, and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the Resources and Infrastructure Sectors, assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and, where no industry standard is specified, should comply with any relevant	

	regulation.

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIMPO304E Conduct wheel loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to operate and shift loads using wheel loader operations.

This unit applies to those working in site-based roles

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Coal mining

Extractive

Metalliferous mining

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for wheel loader operations	1.1 Access, interpret and apply wheel loader operations documentation 1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work activities 1.5 Access, interpret and apply geological and survey data required to

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	complete the work activity 1.6 Inspect and prepare work area in coordination with others in line with workplace procedures 1.7 Select required loader equipment and confirm suitability for work activities 1.8 Obtain and interpret emergency procedures for loaders, and be prepared for fires, accidents and emergencies 1.9 Coordinate and communicate planned activities with others at the site prior to commencement of work activity
2. Operate the wheel loader in line with established requirements to complete work activity	2.1 Carry out prestart and start-up checks in line with workplace procedures 2.2 Identify faults or defects and rectify or report within scope of own responsibility and according to workplace procedures 2.3 Drive and operate loader using techniques suited to equipment capabilities, site and work conditions, and according to workplace environments 2.4 Monitor and manage equipment performance using indicators and alarms in line with manufacturers' specifications 2.5 Monitor hazards and risks during operations, and ensure safety of self, other personnel, plant and equipment 2.6 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
3. Conduct housekeeping activities	3.1 Clear work area and dispose or recycle materials according to workplace procedures 3.2 Manage and/or report hazards, and maintain a safe working environment 3.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIMPO304E Conduct wheel loader operations (Release 1)	RIIMPO304D Conduct wheel loader operations (Release 5)	Minor updates to reflect changes to operator maintenance activities	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMPO304E Conduct wheel loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of wheel loader operations that safely, effectively and efficiently follows workplace procedures to carry out work activity on at least two occasions, and include:

- conducting prestart checks prior to commencing operations and shutdown procedures on completion of operations
- driving and operating the wheel loader for operations and adjusting techniques to suit site conditions
- shifting loads, carries the load as close to the ground as possible and deposits load to the correct location
- parking and securing the equipment

In the course of the above work the candidate must also:

- locate and apply relevant documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- carry out vehicle refuelling requirements and procedures where applicable
- apply safe work practices, identifying and reporting all potential hazards, risks and environmental issues
- apply problem solving and troubleshooting techniques
- conduct loading and unloading
- manage changes in the loads centre of gravity during transportation
- select and use the required tools and equipment according to original equipment manufacturer manual
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- inspect and prepare work area

- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with equipment operations
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for wheel loader operation without attachments, including those relating to:

- work health and safety, including signs of operator fatigue and how it should be managed identifying
- operational, maintenance and basic diagnostics
- housekeeping activities
- personal protective equipment
- maintenance and basic diagnostics
- fire, accident and emergency

Key factors affecting work activities described in performance evidence above, including:

- equipment processes, technical capability and limitations
- geological and technical data
- loading techniques
- plans, reports, maps, specifications

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - wheel loader
 - materials to be shifted
 - personal protective equipment
- be conducted in a safe environment; and,
- be assessed in context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory competency standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years

Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIMPO308F Conduct tracked dozer operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to conduct tracked dozer operations.

This unit applies to those working in site- based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Coal mining

Extractive

Metalliferous mining

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for tracked dozer operations	1.1 Access, interpret and apply tracked dozer operations documentation 1.2 Obtain, interpret, clarify and confirm work plan 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work activities 1.5 Access, interpret and apply geological and survey data required to complete the work activity

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.6 Inspect and prepare work area in coordination with others 1.7 Obtain and interpret emergency procedures for tracked dozer, and be prepared for fires, accidents and emergencies 1.8 Coordinate and communicate planned activities with others at the site prior to commencement of work activity
2. Operate the tracked dozer in line with established requirements to complete work activity	2.1 Carry out prestart and start-up checks in line with workplace procedures 2.2 Determine equipment capacity and operate equipment within capacity 2.3 Identify faults or defects and rectify or report within scope of own responsibility and according to workplace procedures 2.4 Drive and operate dozer using techniques suited to equipment capabilities, site and work conditions, and according to workplace procedures 2.5 Monitor and manage equipment performance using indicators and alarms, and ensure efficiency of operation 2.6 Connect and tow/push equipment and plant within the equipment and connection capacity 2.7 Monitor hazards and risks during operations, and ensure safety of self, other personnel, plant and equipment 2.8 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
3. Conduct housekeeping activities	3.1 Clear work area and dispose or recycle materials according to workplace procedures 3.2 Manage and/or report hazards to maintain a safe working environment 3.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIMPO308F Conduct tracked dozer operations (Release 1)	RIIMPO308E Conduct tracked dozer operations (Release 1)	Minor updates to reflect changes to operator maintenance activities	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMPO308F Conduct tracked dozer operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of tracked dozer operations that safely, effectively and efficiently follows workplace procedures to carry out work activity on at least two occasions, and include:

- conducting prestart checks prior to commencing operations and shutdown procedures on completion of operations
- driving and operating tracked dozer, and adjusting techniques to suit site conditions
- manoeuvring dozer
- using blade
- using ripper
- towing and pushing
- building and maintaining stockpiles
- parking and securing equipment

In the course of the above the candidate must also:

- locate and apply relevant documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- carry out refuelling requirements and procedures
- drive and operate the equipment to site conditions
- apply safe work practices, identifying and reporting all potential hazards, risks and environmental issues
- work safely around high bench walls
- apply problem solving and troubleshooting techniques
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- carry out towing and pushing of equipment and plant
- select and use the required tools and equipment

- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with equipment operations

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for tracked dozer operation without attachments, including those relating to:

- isolation requirements
- work health and safety, including signs of operator fatigue and how it should be managed
- dozer techniques, including towing and pushing
- operational maintenance and basic diagnostics
- personal protective equipment
- fires, accidents and emergencies
- recyclable materials
- housekeeping activities
- machine guidance systems

Key factors affecting work activities described in performance evidence above, including:

- equipment processes, technical capability and limitations
- interpretation of plans, reports, maps, specifications
- geological and technical data (basic)

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - tracked dozer
 - personal protective equipment
- be conducted in a safe environment; and,
- be assessed in context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory competency standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors, assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being	

	assessed and, where no industry standard is specified, should comply with any relevant regulation.

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIMPO309F Conduct wheeled dozer operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to conduct wheeled dozer operations.

This unit applies to those working in site- based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Civil infrastructure

Coal mining

Extractive

Metalliferous mining

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for wheeled dozer operations	1.1 Access, interpret and apply wheeled dozer operations documentation 1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	activities 1.5 Access, interpret and apply geological and survey data required to complete the work activity 1.6 Inspect and prepare work area in coordination with others in accordance with workplace requirements 1.7 Obtain and interpret emergency procedures for wheeled dozer, and be prepared for fires, accidents and emergencies 1.8 Coordinate and communicate planned activities with others at the site prior to commencement of work activity
2. Operate wheeled dozer in line with established requirements to complete work activity	2.1 Carry out prestart and start-up checks in line with workplace procedures 2.2 Identify faults or defects and rectify or report within scope of own responsibility and according to workplace procedures 2.3 Drive and operate wheeled dozer using techniques suited to equipment capabilities, site and work conditions, and according to workplace procedures 2.4 Control speed and articulated steering of the wheeled dozer during tramming operations 2.5 Use dozer controls and functions effectively, including manoeuvre attachments to complete tasks 2.6 Carry out towing of equipment and plant safely within equipment and/or connection capabilities 2.7 Maintain safe grip, traction and productivity in varied operating conditions 2.8 Monitor hazards and risks during operations, and ensure safety of self, other personnel, plant and equipment 2.9 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
3. Conduct housekeeping activities	3.1 Clear work area and dispose or recycle materials according to workplace procedures 3.2 Manage and/or report hazards to maintain a safe working environment 3.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIMPO309F Conduct wheeled dozer operations (Release 1)	RIIMPO309E Conduct wheeled dozer operations (Release 1)	Minor updates to reflect changes to operator maintenance activities	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMPO309F Conduct wheeled dozer operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of wheeled dozer operations that safely, effectively and efficiently follows workplace procedures to carry out work activity on at least two occasions, and include:

- conducting prestart checks prior to commencing operations and shutdown procedures on completion of operations
- driving and operating a tracked dozer, and adjusting techniques to suit site conditions
- completing a minimum of three of the following wheeled dozer operations:
 - manoeuvring dozer
 - blade application
 - ripper application
 - towing and pushing
 - pushing and preparing overburden
 - bench and pad preparation
 - trimming and cutting
 - building and maintaining stockpiles
 - supporting other vehicles
 - creation of windrows
 - dump establishment
 - road works
 - contours
 - batters
 - rehabilitation and drainage
 - final landform and the interpretation of associated survey pegs
 - sealing tailing dams

- parking and securing equipment

In the course of the above the candidate must also

- locate and apply relevant documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- carry out vehicle refuelling requirements and procedures where applicable
- apply safe work practices, identifying and reporting all potential hazards, risks and environmental issues
- work safely around overhead power lines
- apply problem solving and troubleshooting techniques
- carry out towing and pushing of equipment and plant
- select and use the required tools and equipment
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with equipment operations
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for wheeled dozer operation without attachments, including those relating to:

- isolation requirements
- work health and safety, including signs of operator fatigue and how it should be managed
- dozer operational procedures and techniques (including towing and pushing)
- operational, maintenance and basic diagnostics
- personal protective equipment
- fires, accident and emergencies
- recyclable materials
- housekeeping activities
- machine guidance systems

Key factors affecting work activities described in performance evidence above, including:

- equipment processes, technical capability and limitations
- plans, reports, maps, specifications
- geological and technical data
-

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - wheeled dozer
 - personal protective equipment
- be conducted in a safe environment; and,
- be assessed in context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory competency standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors, assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and, where no industry standard is specified, should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIMPO318F Conduct civil construction skid steer loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.
Release 2	Editorial and other amendments made to clarify requirements in Application and Performance Criteria 5.3.

Application

This unit describes the skills and knowledge required operate a skid steer loader to load, haul and distribute materials.

This unit applies to those working in site based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

This unit alone does not provide sufficient skill to independently load and unload equipment. To perform this activity safely, personnel must either complete or be assisting someone who has completed RIIHAN308F Load and unload plant or equivalent.

Unit Sector

Civil infrastructure

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for skid steer loader operations	1.1 Access, interpret and apply skid steer loader operations documentation 1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Identify hazards and environmental issues, assess the risks and

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work activities 1.5 Obtain, identify and implement traffic signage requirements according to standard operating procedures and safe work practices 1.6 Select required skid steer equipment and confirm suitability for work activities 1.7 Obtain and interpret emergency procedures for skid steers, and be prepared for fires, accidents and emergencies 1.8 Coordinate and communicate planned activities with others at the site prior to commencement of work activity
2. Operate skid steer loader in line with established requirements	2.1 Carry out prestart and start-up checks in line with workplace procedures 2.2 Identify faults or defects and rectify or report within scope of own responsibility and according to workplace procedures 2.3 Drive and operate loader using techniques suited to equipment capabilities and site work conditions, and according to workplace procedures 2.4 Monitor hazards and risks during operations, and ensure safety of self, other personnel, plant and equipment 2.5 Monitor and manage equipment performance using indicators and alarms
3. Load, carry and place materials to complete work activity	3.1 Establish weight of load and ensure it is within safe operational limits of the machine 3.2 Position machinery to ensure stable and effective shift of materials according to work requirements 3.3 Shift materials safely and effectively, using hand audible and communication signals, in line with workplace procedures 3.4 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
4. Select, remove, fit and use attachments for a skid steer loader	4.1 Select appropriate attachment and required equipment for the task, and in accordance with safe working load requirements 4.2 Fit attachment in line with workplace procedures 4.3 Test attachment and ensure correct fitting and operation

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.4 Use attachment within design limits and in accordance with workplace procedures 4.5 Remove, clean and store attachments in designated location in line with workplace procedures
5. Prepare to relocate the skid steer loader	5.1 Prepare for relocation of skid steer loader 5.2 Move skid steer loader safely within and/or between work areas, observing relevant codes and traffic management requirements 5.3 Assist loading and unloading machine from float/trailer as required by safe work practices
6. Conduct housekeeping activities	6.1 Clear work area and dispose of or recycle materials according to workplace procedures 6.2 Manage and/or report hazards to maintain a safe working environment 6.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIMPO318F Conduct civil construction skid steer loader operations (Release 1)	RIIMPO318E Conduct civil construction skid steer loader operations (Release 1)	Minor updates to reflect changes to operator maintenance and relocation activities	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMPO318F Conduct civil construction skid steer loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.
Release 2	Editorial and other amendments made to clarify requirements in Application and Performance Criteria 5.3.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of skid steer loader operations that safely, effectively and efficiently follows workplace procedures to carry out work activity on at least two occasions, and include:

- conducting prestart checks prior to commencing operations and shutdown procedures on completion of operations
- driving and operating the equipment to site conditions
- completion of operations to specification using at least two different material types (i.e. one different material per occasion) including:
 - stripping/spreading materials
 - backfilling
 - excavations
 - mixing materials
- selecting, fitting, testing, using and removing attachments on at least two occasions (i.e. one attachment per occasion), the attachment must be certified and approved in line with workplace procedures and could include, but not limited to, the following:
 - multipurpose bucket
 - forks
 - dozer blade
 - backhoe
 - auger
 - chain digger
 - power broom
 - profiler

- tiller/mixer
- rotary hoe
- hammer
- asphalt cutter/saw
- concrete cutter/saw
- rake
- assisting with loading and unloading skid steer loader from float/trailer
- safely parking and securing equipment

In the course of the above the candidate must also:

- locate and apply relevant documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- apply safe work practices, identifying and reporting all potential hazards, risks and environmental issues
- apply problem solving and troubleshooting techniques when operating equipment
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- apply levelling techniques
- establish weight of load
- manage changes in the loads centre of gravity during transportation
- select and use the required tools and equipment
- apply methods of changing machine attachments
- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with equipment operations
- organise work activities to meet all task requirements
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for skid steer loader operations, including those relating to:

- isolation requirements for skid steer loader
- fires, accidents and emergencies
- work health and safety, including signs of operator fatigue and how it should be managed
- traffic control responsibilities and authorities
- project quality requirements
- chain of responsibility for loading and unloading of equipment
- operational, maintenance and basic diagnostics
- personal protective equipment

- recyclable materials
- housekeeping activities

Key factors affecting work activities described in performance evidence above, including:

- equipment processes, technical capability and limitations
- drawings and sketches
- ground conditions
- materials characteristics, including density and viscosity

Key features associated with civil construction works, including:

- civil construction terminology
- basic principles of material technology and material compaction for civil works
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - a skid steer loader
 - materials to be shifted
 - personal protective equipment
- be conducted in a safe environment; and,
- be assessed in context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory competency standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements.

This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment

- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors, assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and, where no industry standard is specified, should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume Implementation Guides are available from VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIMPO319E Conduct backhoe/loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.
Release 2	This version was released with RII Resources and Infrastructure Industry Training Package Version 7.1. Editorial amendments to Performance Evidence to clarify task requirements.

Application

This unit describes the skills and knowledge required to operate a backhoe/loader to load, distribute and place materials.

This unit applies to those working in site based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Civil infrastructure

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for backhoe/loader operations	1.1 Access, interpret and apply backhoe/loader operations documentation 1.2 Obtain, interpret, clarify and confirm work instructions 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	activities 1.5 Identify, obtain and implement signage traffic management requirements according to standard operating procedures and safe work practices 1.6 Select required backhoe/loader equipment and confirm suitability for work activities 1.7 Obtain and interpret emergency procedures for backhoe/loaders, and be prepared for fires, accidents and emergencies 1.8 Coordinate and communicate planned activities with others at the site prior to commencement of work activity
2. Operate backhoe/loader in line with established requirements	2.1 Carry out prestart and start-up checks in line with workplace procedures 2.2 Identify faults or defects and rectify or report within scope of own responsibility and according to workplace procedures 2.3 Drive and operate machine using techniques suited to equipment capabilities, site and work conditions, and according to workplace procedures 2.4 Monitor hazards and risks during operations , and ensure safety of self, other personnel, plant and equipment 2.5 Monitor and manage equipment performance using indicators and alarms
3. Load, carry and place materials to complete work activity	3.1 Establish weight of load and ensure it is within safe operational limits of the machine 3.2 Use lifting gear within safe working load requirements and in line with workplace procedures 3.3 Position and locate machinery to ensure stable and effective shift materials according to work requirements 3.4 Shift materials safely and effectively, using hand, audible and communication signal, in line with workplace procedures 3.5 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
4. Select, remove, fit and attachments for a backhoe/loader	4.1 Select attachment for the task and fit attachment in line with workplace procedures 4.2 Test attachment and ensure correct fitting and operation

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.3 Use attachment within design limits and in accordance with workplace procedures 4.4 Remove, clean and store attachments in designated location in line with workplace procedures
5. Relocate the backhoe/ loader	5.1 Prepare backhoe/loader for relocation 5.2 Move backhoe/loader safely between worksites, observing relevant codes and traffic management requirements
6. Conduct housekeeping activities	6.1 Clear work area and dispose of or recycle materials according to workplace procedures 6.2 Manage and/or report hazards to maintain a safe working environment 6.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIMPO319E Conduct backhoe/loader operations (Release	RIIMPO319D Conduct backhoe/loader operations (Release 3)	Minor updates to reflect changes to operator maintenance activities and	Equivalent unit

1)		assessment for attachments	

Links

Companion Volume Implementation Guides are available from VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIMPO319E Conduct backhoe/loader operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.
Release 2	This version was released with RII Resources and Infrastructure Industry Training Package Version 7.1. Editorial amendments to Performance Evidence to clarify task requirements.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of loader/backhoe operations that safely, effectively and efficiently follows workplace procedures to carry out work activity on at least two occasions, and include:

- conducting prestart checks prior to commencing operations and shutdown procedures on completion of operations
- driving and operating the equipment, and adjusting techniques to suit site conditions
- completion of operations to specification using at least two different material types (i.e. one different material type per occasion) including:
 - mixing materials
 - stripping/spreading materials
 - trench excavation
 - backfilling
 - lifting and carry materials
 - loading dump trucks, wagons, hoppers or chutes
 - cutting/boxing
- selecting, fitting, testing, using and removing at least two attachments (i.e. one attachment per occasion), which must be certified and approved in line with workplace procedures and could include, but are not limited to, the following:
 - extending devices
 - tilt bucket
 - buckets

- compaction wheel
- ripper
- plate compactor
- rock breaker
- auger
- broom
- mower/slasher
- forklift
- 4 in 1 bucket and free/rock grab
- parking and securing of equipment

In the course of the above work the candidate must also:

- locate and apply relevant documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- carry out vehicle refuelling requirements and procedures where applicable
- apply safe work practices, identifying and reporting all potential hazards, risks and environmental issues
- apply problem solving and troubleshooting techniques when operating equipment
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- apply levelling techniques
- establish weight of load
- manage changes in the loads centre of gravity during transportation
- select and use the required tools and equipment
- work safely around other machines and personnel
- apply methods of changing machine attachments
- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with equipment operations
- organise work activities to meet all task requirements
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for backhoe/loader operations, including those relating to:

- isolation requirements
- fires, accidents and emergencies
- work health and safety, including signs of operator fatigue and how it should be managed
- site isolation and traffic control responsibilities and authorities

- project quality requirements
- operational, maintenance and basic diagnostics
- personal protective equipment
- recyclable materials
- housekeeping activities

Key factors affecting work activities described in performance evidence above, including:

- equipment processes, technical capability and limitations
- drawings and sketches
- ground conditions
- materials characteristics, including density and viscosity

Key features associated with civil construction works, including:

- civil construction terminology
- basic principles of material technology and material compaction for civil works
- basic earthworks calculations
- civil construction activity sequences of road construction, earthworks and drainage

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - backhoe/loader
 - personal protective equipment
- be conducted in a safe environment; and,
- be assessed in context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory competency standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided

- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume Implementation Guides are available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIWHS202E Enter and work in confined spaces

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.
Release 2	Minor amendment to Knowledge Evidence to correct typographical error.

Application

This unit describes the skills and knowledge required to enter and work in confined spaces in the resources and infrastructure industries.

It applies to those working in operational roles. They generally work under supervision to undertake a prescribed range of functions involving known routines and procedures and take responsibility for the quality of work outcomes.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories and industry sectors. Users must check requirements with relevant body before applying the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare for working in confined space	1.1 Obtain, interpret and confirm work requirements 1.2 Access, interpret and apply documentation required to enter and work in confined spaces 1.3 Identify and address potential risks, hazards and environmental issues, and implement control measures according to workplace procedures 1.4 Obtain and confirm authorisation of a confined space entry permit

ELEMENT	PERFORMANCE CRITERIA
	that meets regulatory requirements 1.5 Select and wear appropriate personal protective equipment for planned work activities 1.6 Obtain and interpret emergency procedures with the stand-by person, and be prepared for emergency situations 1.7 Identify, obtain and implement signage and barrier requirements according to workplace procedures 1.8 Select tools and equipment for the tasks, check for serviceability and rectify or report any faults to relevant personnel 1.9 Position rescue equipment by the entry permit
2. Work in confined space	2.1 Gain access to confined space 2.2 Test and monitor the atmosphere for harmful elements according to workplace procedures 2.3 Correctly apply tagging and lock-out procedures 2.4 Enter the confined space according to workplace procedures 2.5 Maintain ongoing communication with the stand-by person 2.6 Comply with entry permit requirements 2.7 Monitor and adhere to allocated entry time
3. Exit confined space	3.1 Exit confined space according to workplace procedures 3.2 Recover tools, equipment and materials 3.3 Conduct inspection of the confined spaces according to workplace procedures 3.4 Remove tagging and lock-out procedures 3.5 Complete confined space entry permit requirements according to workplace procedures
4. Clean up	4.1 Clear work area and dispose of materials according to workplace procedures 4.2 Remove, clean and store barriers and signs 4.3 Conduct equipment inspections to identify faults according to manufacturer specifications and workplace procedures and report to relevant personnel 4.4 Conduct routine operational servicing, lubrication and housekeeping activities according to workplace procedures 4.5 Process written maintenance records according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Identifies and interprets information from workplace procedures, documentation and regulations
Writing	Produces and completes written documents required for workplace procedures
Self-management	Monitors and minimises own exposure to worksite risks and hazards during activities
Oral communication	Uses a range of communication techniques and systems to communicate with others

Unit Mapping Information

Supersedes and is equivalent to RIIWHS202D Entering and working in confined spaces.

Links

Companion Volume Implementation Guide is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIWHS202E Enter and work in confined spaces

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.
Release 2	Minor amendment to Knowledge Evidence to correct typographical error.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- enter and work in confined spaces on at least two occasions, including:
 - obtaining the required entry permit and instructions for performing work in confined spaces
 - interpreting and applying workplace procedures
 - applying tagging and lock out procedures
 - selecting, wearing and caring for personal protective equipment
 - using atmospheric monitoring devices prior to entering the confined space
 - entering the confined space
 - working in the confined space
 - using atmospheric monitoring devices during confined space activity
 - applying safe materials handling methods
 - exiting the confined space
 - removing tagging and lock out.

During the above, the candidate must:

- locate and apply relevant legislation, documentation, policies and procedures and confirm that the work activity is compliant
- implement the requirements, procedures and techniques for entering and working in confined spaces
- work effectively with others to enter and work in confined spaces in a way that meets all required outcomes

- communicate clearly and concisely with others to receive and clarify work instructions and to determine coordination requirements prior to commencing and during work activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key legislation relevant to enter and work in confined spaces
- key policies, procedures and documentation required to enter and work in confined spaces, including:
 - entry and exit procedures, risks and regulations
 - site and equipment safety requirements
 - site isolation and site control responsibilities and authorities
 - safety data sheets
 - incidents and emergency response documentation
- principles and techniques for identifying and responding to:
 - areas that constitute confined spaces
 - types of air contaminants and toxic gases
 - limitations of breathing apparatus
 - relevant hazards and emergencies
- equipment types, characteristics, technical capabilities and limitations
- principles and techniques for using confined space and industry terminology
- techniques for coordinating and communicating job activities with others.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - personal protective equipment
 - equipment related to entering and working in confined spaces
 - relevant documentation
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert	

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
	experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the Companion Volume Implementation Guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

RIIWHS204E Work safely at heights

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to work safely at heights in the resources and infrastructure industries.

It applies to those working in operational roles. They generally work under supervision to undertake a prescribed range of functions involving known routines and procedures and take responsibility for the quality of work outcomes.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories and industry sectors. Users must check requirements with relevant body before applying the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify work requirements	1.1 Obtain, interpret and confirm work requirements 1.2 Access, interpret and apply documentation required to work safely at heights 1.3 Identify and address potential risks, hazards and environmental issues, and implement control measures according to workplace procedures 1.4 Inspect worksite to determine layout and physical condition, condition of structures and equipment requirements 1.5 Adhere to legislative requirements

ELEMENT	PERFORMANCE CRITERIA
	1.6 Select appropriate plant, tools and equipment for the job, inspect them for serviceability and rectify or report any faults prior to commencement of work activities 1.7 Select and wear personal protective equipment appropriate for work activities 1.8 Obtain and interpret emergency procedures, and be prepared for emergency situations
2. Identify work procedures and instructions	2.1 Consult with relevant personnel to select materials, tools and equipment required for the work activities 2.2 Inspect and install fall protection and perimeter protection equipment 2.3 Identify methods of moving tools and equipment to the work area according to workplace procedures 2.4 Ensure the safety system has been installed according to workplace procedures 2.5 Select and install appropriate signs and barricades according to workplace procedures
3. Access and install equipment	3.1 Consult with relevant personnel to ensure anchor fall protection and associated equipment is fitted and adjusted according to workplace procedures 3.2 Ensure all required equipment is installed according to workplace procedures 3.3 Access work area for people, tools and equipment according to workplace procedures 3.4 Locate tools and materials to eliminate or minimise the risk of items being knocked down
4. Perform work at heights	4.1 Check access from ground to work area and ensure it is safe according to workplace procedures 4.2 Keep fall equipment in place and adjusted appropriately for movement during work 4.3 Undertake manual handling of materials and equipment according to workplace procedures 4.4 Locate materials and equipment ensuring that they are safely secured and distributed according to workplace procedures 4.5 Check safety system periodically for compliance 4.6 Monitor risk control measures to ensure that they are effective and appropriate according to workplace procedures 4.7 Reassess risk control measures, as required, in accordance with workplace procedures and undertake alterations
5. Clean up work area	5.1 Consult with relevant personnel to ensure safety system is dismantled and removed according to workplace procedures 5.2 Clear work area and dispose of materials

ELEMENT	PERFORMANCE CRITERIA
	5.3 Clean and maintain the plant and equipment, inspect for ensure serviceability and rectify or report any faults or issues to relevant personnel 5.4 Process written maintenance records according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Identifies and interprets information from workplace procedures, documentation and regulations
Self-management	Monitors and minimises own exposure to worksite risks and hazards during activities
Oral communication	Uses a range of communication techniques and systems to communicate with others

Unit Mapping Information

Supersedes and is equivalent to RIIWHS204D Working safely at heights.

Links

Companion Volume implementation guides is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIWHS204E Work safely at heights

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- work safely at heights on at least two occasions, including:
 - accessing, interpreting and applying technical and safety information for working at heights
 - assessing hazards and risks associated with working at heights and implementing control methods
 - selecting, wearing and caring for personal protective equipment
 - identifying required safety systems including fall protection and associated equipment
 - checking the correct fitting, adjusting and anchoring of fall protection and associated equipment
 - performing work safely at heights.

During the above, the candidate must:

- locate and apply relevant documentation, policies and procedures and confirm that the work activity is compliant
- implement the requirements, procedures and techniques for working safely at heights
- work effectively with others to work safely at heights in a way that meets all required outcomes
- communicate clearly and concisely with others to receive and clarify work instructions and to determine coordination requirements prior to commencing and during work activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key legislation required to work safely at heights

- key policies, procedures and documentation required to work safely at heights, including:
 - statutory and regulatory authority requirements
- principles and techniques for work safely at heights, including:
 - heights safety systems
 - safe work methods
- principles and techniques for identifying names and functions of equipment, components and materials
- principles and techniques for complying with equipment manufacturer instructions and specifications
- safe shifting and handling of tools and materials
- principles and techniques for identifying relevant hazards and emergencies
- techniques for coordinating and communicating job activities with others.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
 - personal protective equipment
 - equipment related to working safely at heights
 - relevant documentation
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment

- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	AQF indicator level***	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the Companion Volume Implementation Guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides is found on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

TAEDEL311 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with TAE Training and Education Training Package Version 5.0. Supersedes and is equivalent to TAEDEL301 Provide work skill instruction.

Application

This unit describes the skills and knowledge required to conduct individual and small group work skill instruction using existing support materials and demonstration of work skills as a training strategy; and assess the success of training and one's own training performance. It focuses on the training being driven by the work process and context.

The unit applies to a person working under supervision as a work skill instructor in a wide range of settings not restricted to training organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Delivery and facilitation

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Organise instruction and demonstration	1.1 Gather information about learner characteristics and learning needs 1.2 Confirm a safe learning environment 1.3 Prepare simple session plan for work skill instruction and demonstration objectives 1.4 Access and review support materials for their suitability and

ELEMENTS	PERFORMANCE CRITERIA
	relevance 1.5 Organise access to physical support material required for instruction and demonstration 1.6 Notify learners of planned work skill instruction
2. Conduct instruction and demonstration	2.1 Interact with learners to establish a safe and comfortable learning environment 2.2 Brief learners on work health and safety (WHS) procedures and requirements prior to, and during, training 2.3 Follow plan for work skill instruction and cover all learning objectives 2.4 Use facilitation techniques to structure, pace and enhance learning, and explain and demonstrate work skills 2.5 Apply coaching techniques to assist learning 2.6 Use communication techniques to provide information, engage and instruct learners and demonstrate work skills 2.7 Monitor professional relationship with learner, and adjust to suit learner needs 2.8 Provide opportunities for learners to practise the work skill
3. Check training performance	3.1 Use observation and questioning to check learner acquisition and use of new skills and knowledge 3.2 Provide feedback on learner performance to support learning 3.3 Monitor learner progress and outcomes in consultation with the learner
4. Review training performance	4.1 Gather feedback from learners on work skill instruction according to organisational procedures 4.2 Reflect on own practice in providing instruction and demonstration, and identify strategies for improvement 4.3 Maintain, store and secure learner records, according to organisational and legal requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	Sources and interprets processes and procedures, support materials, and information relevant to providing work instruction

Skill	Description
Writing	• Completes required workplace documentation using appropriate language and format
Oral communication	• Uses communication techniques to build rapport, monitor progress and provide feedback to learners
Numeracy	• Interprets and uses scheduling and sequencing information, and estimates time
Initiative and enterprise	• Asks questions to clarify understanding, and to provide and seek feedback • Identifies and responds to potential risks, problems and opportunities for improvement and considers options for different approaches
Planning and organising	• Organises and completes work according to defined requirements, taking responsibility for some decisions and sequencing tasks to achieve efficient outcomes
Teamwork	• Builds rapport and establishes productive working relationships to achieve learning outcomes

Unit Mapping Information

Supersedes and is equivalent to TAEDEL301 Provide work skill instruction.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3>

Assessment Requirements for TAEDEL311 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with TAE Training and Education Training Package Version 5.0. Supersedes and is equivalent to TAEDEL301 Provide work skill instruction.

Performance Evidence

The individual must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- provide at least 3 work skill instruction sessions, with each session being of at least 30 minutes duration and involving:
 - a different work skill for each session
 - delivery of at least 1 session to an individual learner
 - delivery of at least 1 session to a small group of at least 2 learners.

Knowledge Evidence

The individual must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures for gathering feedback from learners on work skill instruction
- learner characteristics and needs
- information included in a plan for work skill instruction:
 - session plan, consisting of:
 - session objectives
 - content to be covered
 - delivery approach to be used
 - task breakdown
 - timing
- sources, availability and content of suitable support materials
- training facilitation and coaching techniques to support adult learning relevant to work skill instruction, and when to use them
- overview of adult learning principles and their application to work skill instruction

- key steps for practising self-reflection on own work skill instruction to identify opportunities for improvement
- sources of assistance relating to contextualising support materials to the workplace
- work health and safety (WHS) issues in the learning environment, including:
 - roles and responsibilities of key personnel
 - responsibilities of learners
 - WHS policies and procedures, including those relating to:
 - hazard and risk identification
 - safe use of equipment and emergency procedures
 - risk controls for the specific learning environment.

Assessment Conditions

Skills in this unit must be demonstrated in a real or simulated vocational education and training environment. Evidence gathered for assessment may include that collected in real time or via a submitted recording.

This includes access to:

- learners requiring work skill instruction
- support materials relating to the work skill instruction sessions described in performance evidence
- access to information about the plan for work skill instruction, including session plan, task breakdown and timing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3>

TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is a release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate a forklift truck safely in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a HRWL licence to operate this plant.

Forklift truck means a powered industrial truck equipped with lifting media made up of a mast and an elevating load carriage to which is attached a pair of fork arms or other attachments that can be raised 900 mm or more above the ground, but does not include a pedestrian-operated truck or a pallet truck.

A person performing this work is required to hold a forklift truck High Risk Work Licence (HRWL).

This unit requires a person operating a forklift truck to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan work/task

- 1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and site inspection is conducted in accordance with workplace procedures
- 1.2** Work area operating surface is assessed to determine suitability for operational use of forklift truck in accordance with workplace procedures
- 1.3** Suitability of forklift truck and attachment working load limit (WLL) is determined for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4** Working area is inspected and appropriate paths for operating the forklift truck and moving and placing load/s in work area are assessed and managed in accordance with workplace procedures
- 1.5** Hazard and risk control measures are identified and reported to relevant person/s in accordance with workplace procedures
- 1.6** Traffic management plan implementation is confirmed in accordance with workplace procedures
- 1.7** Appropriate communication procedures are identified with relevant people in accordance with workplace procedures
- 1.8** All work is confirmed to ensure coverage of work/task requirements for the relevant work area is in accordance with workplace procedures

2 Prepare for work/task	2.1 Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with safe work procedures 2.2 Weather and work environmental conditions are assessed to determine any impact on forklift truck operations in accordance with manufacturer requirements and safe work procedures 2.3 Risk control measures for hazards identified are checked for implementation in accordance with safe work procedures 2.4 Forklift truck is accessed in a safe manner in accordance with manufacturer requirements and workplace procedures 2.5 Forklift truck logbook is checked in accordance with manufacturer, regulatory requirements and safe work procedures 2.6 Pre-start checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements 2.7 Forklift truck is set up correctly with any relevant attachments as per work plan in accordance with relevant manufacturer requirements including data plate and safe work procedures 2.8 Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures 2.9 Hazard and risk control measures are checked for implementation and communicated to people in the work area in accordance with safe work procedures
3 Perform work/task	3.1 Weight and positioning of load is assessed to ensure compliance with forklift truck data plate requirements and in accordance with safe work procedures

- 3.2 Forklift truck is operated safely in accordance with manufacturer requirements and safe work procedures
 - 3.3 Loads are monitored constantly when lifting, moving, lowering and placing to ensure stability of load and avoidance of hazards in accordance with safe work procedures
 - 3.4 Unplanned and unsafe situations are responded to in accordance with safe work procedures
 - 3.5 Loads are picked up, transported and placed using all forklift truck movements in accordance with safe work procedures
 - 3.6 Forklift truck is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures
- 4 **Pack Up**
 - 4.1 Forklift truck shutdown procedures are carried out in accordance with manufacturer requirements and safe work procedures
 - 4.2 Forklift truck is secured to prevent unauthorised access/use in accordance with safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2001 Licence to operate a forklift truck

Links

Companion Volume Implementation Guide -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying safe operating procedures for a forklift truck including:
 - maintaining safe operating speed
 - travelling with load lowered to an appropriate height for the terrain, operating surface and visibility in relation to direction of travel
- applying relevant forklift truck manufacturer requirements and data plate information and approved modifications to attachments fitted are in accordance with manufacturer requirements
- carrying out pre-start checks, including visual inspection which must include:
 - battery charge as required by manufacturer requirements
 - checking and interpreting data plate/s are relevant to the attachment and the forklift truck
 - checking for signs of paint separation and stressed welds indicating potential structural weakness
 - document evidence of damage
 - engine / mechanical fluid level checks including fuel as required by manufacturer requirements
 - ensuring availability of correct forklift truck logbook and updating records as required
 - ensuring forklift truck tyres or other attachment/s are securely fitted
 - ensuring seat and mirrors are adjusted appropriately and seat belt is functional
 - fluid leaks
 - lights are working effectively
 - safety equipment checks
 - signage and labels to ensure they are visible and legible
 - wheels and tyres for damage/correct inflation if applicable
- conducting and applying risk and hazard assessment strategies including:
 - insufficient lighting
 - other specific hazards including dangerous goods
 - overhead hazards and fixed structures, roof beams and doorways
 - restricted and poorly ventilated areas

- surface suitability based on forklift truck and task requirements
- the risk of collision with people, moving plant and fixed structures
- weather conditions
- complying with Commonwealth, State and Territory Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety and Health (OSH) legislation, regulations safe work and workplace procedures
- conducting operational checks, which must ensure:
 - all controls are located, identified and tested for functionality
 - all hydraulic functions operated to maximum extension and ensuring attachment (if fitted) movements and control functions are smooth and comply with operating requirements
 - hazard warning systems (e.g. reversing beepers, lights and horns) are functional
 - recording and maintaining accurate information relating to forklift truck operations
 - safety devices as fitted
 - start-up is in accordance with manufacturer requirements
 - steering, transmission and brake functions comply with operating requirements
 - there are no unusual noises
- confirming and following traffic management plan procedures relevant to their role in the work area
- conducting relevant procedures for refuelling and isolating fuel/power source as per manufacturer requirements using appropriate PPE
- determining relevant lifting attachment to perform work/task
- determining lift requirements including:
 - positioning of unusually balanced/shaped loads
 - centre of gravity
 - dynamic nature of load
 - tyre/attachment positioning
 - weight
- ensuring risk control measures within the work area are effective as per workplace procedures
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- interpreting and confirming relevant documentation, workplace instructions, safety information, emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various environmental conditions
- maintaining communication with other workplace personnel through using worksite procedures including:
 - audible and visual warning devices
 - signage
 - two-way radio
 - verbal instructions
 - written instructions
- maintaining three points of contact whilst accessing and egressing forklift truck and ensuring

rungs / steps are free of hazards

- operating and monitoring safe forklift truck operations using minimum 250kg dynamic and non-dynamic loads that include:
 - aligning tynes/attachment to load
 - carrying out a lift to 75% of the maximum height
 - conducting trial lift to ensure forklift truck and load are stable, and load is safe to move
 - correctly using horns and mirrors in workplace
 - correctly positioning and using an observer to assist when operating with a load that may restrict vision or be placed out of vision of the operator
 - driving applicable to conditions and moving loads safely
 - driving a forklift truck safely with load in forward and reverse, while maintaining visibility through an obstacle course including:
 - an 'S' bend with a minimum 90 degrees left and right turn
 - ensuring load/s remains stable through pick up, transport and placement
 - forklift truck speed is appropriate to load and surroundings
 - lowering dynamic and non-dynamic loads to appropriate height for travel in forward and reverse
 - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely at various heights within a compliant racking system
 - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely into/onto an elevated, flat, stable area
 - tilting mast (or forks if applicable) to ensure balance of load
 - using gluts/dunnage appropriately and lowering load safely
 - using tilt and side shift (where fitted) safely to manoeuvre dynamic and non-dynamic loads into allocated space
- reporting to relevant person/s on site risk control measures that are not in place or are deficient
- setting up an exclusion zone
- securely parking forklift truck and isolating in appropriate position including:
 - minimising possible access by unauthorised person/s
 - tynes/attachment lowered to required position in accordance with manufacturer requirements
 - park brake applied
 - switching off, isolating fuel/power source and removing key according to workplace procedures
- shutting down a forklift truck in accordance with manufacturer requirements and workplace procedures

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and industry standards, codes of practice and guidelines to safely operate a forklift truck
- communication procedures including:
 - audible and visual warning devices
 - hand signals
 - questioning techniques
 - signage
 - traffic warning systems
 - two-way radio
 - written instructions
- forklift truck characteristics and capabilities, manufacturer requirements and instructions for any attachments
- impact of the following on the operation of the forklift truck including:
 - failure/loss of control including brakes and steering
 - failure of equipment during forklift truck operations
 - forklift truck instability causes including:
 - deterioration of ground condition
 - overloading
 - pick up and placement of load
 - irregular loads
 - operating on ramps and uneven surfaces and in restricted spaces
 - use of forklift truck data plate and attachment data plate and appropriate methodology to determine weight of a load is appropriate for forklift truck and any attachment if fitted including the estimation or determination from:
 - labels on the actual load
 - markings on the actual load
 - paperwork such as consignment notes, running sheets and weighbridge dockets
 - weighing a carton and calculating load
- manufacturer requirements, instructions and operator's manual
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions including:
 - wind
 - lightning
 - water/ice impacted surface/ground
 - rain
 - extreme heat
 - Ultra violet (UV) exposure
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations including:
 - lock out and tag out procedures
- relevant procedures for refuelling and recharging forklift truck using appropriate PPE

including:

- gas bottle
- connecting battery to charger and disconnecting battery from charger and reconnecting to forklift truck
- refuelling
- procedures for recording, reporting and maintaining workplace records and information
- risk assessment process including hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - personal protective equipment (PPE)
- safe use and compliance of different types of attachments including:
 - bale clamps
 - carpet spike for carpet rolls
 - drum carrier
 - jib attachment
 - paper roll clamps
 - personnel work platforms
 - rotators
 - slippers/fork extensions on tynes
- suitability and lifting capability of the attachment to be used
- shut down procedures for a forklift truck in accordance with manufacturer requirements
- traffic management plan procedures and requirements
- typical routine problems encountered operating a forklift truck and associated equipment, and adjustments required for correction
- workplace procedures including work plan which may be verbal, documented/written, or electronically generated
- work area operating surface suitability including issues with:
 - backfilled ground
 - bitumen (damaged, cracked)
 - concrete (damaged, cracked)
 - hard compacted soil
 - potholes
 - railway tracks
 - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
 - soft soils
 - trench covers
- Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety

and Health (OSH) requirements, safe work and workplace procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- a suitable forklift truck that complies with AS 2359 Powered industrial trucks and is in a safe/serviceable condition in accordance with manufacturer requirements
- associated equipment for forklift truck operations
- suitable dynamic and non-dynamic loads
- suitable compliant racking system
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
 - approved codes of practice and relevant guidance material
 - relevant Australian technical standards
 - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable)

Links

Companion Volume Implementation Guide -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a boom-type Elevating Work Platform (EWP) where the length of the boom is 11 metres or more in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a Risk Work Licence (HRWL) to operate this plant.

Boom-type elevating work platform means a telescoping device, hinged device, or articulated device, or any combination of these, used to support a platform on which personnel, equipment and materials may be elevated.

A person performing this work is required to hold a boom-type elevating work platform HRWL.

This unit requires a person operating an EWP to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan work/task

- 1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and a site inspection is completed in accordance with workplace procedures
- 1.2** Work area ground/operating surface is assessed to determine suitability for operational use of EWP in accordance with manufacturer requirements and workplace procedures
- 1.3** EWP capabilities are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4** Appropriate paths for operating the EWP and moving in work area are assessed and determined in accordance with workplace procedures
- 1.5** Relevant hazard and risk control measures are applied and advised to relevant person/s in accordance with workplace procedures

- 1.6** Traffic management plan implementation is confirmed in accordance with workplace procedures
 - 1.7** Appropriate communication procedures are identified, with relevant people in accordance with workplace procedures
 - 1.8** All work is confirmed to ensure coverage of work/task requirements for the relevant work area in accordance with workplace procedures
- 2 Prepare for work/task**
 - 2.1** Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with workplace procedures
 - 2.2** Risk control measures for hazards identified are checked for implementation in accordance with workplace procedures
 - 2.3** Safety equipment including Personal Protective Equipment (PPE) are inspected, fitted correctly and used in accordance with manufacturer requirements and safe work procedures
 - 2.4** EWP is accessed in a safe manner in accordance with manufacturer requirements and safe work procedures
 - 2.5** Pre-start EWP checks are carried out in accordance with manufacturers requirements and safe work procedures
 - 2.6** EWP is started and is checked for any abnormal noises in accordance safe work procedures
 - 2.7** EWP is positioned correctly as per work plan in work area in accordance with relevant manufacturer requirements and safe work procedures
 - 2.8** EWP is stabilised appropriately in accordance with the workplan, relevant manufacturer requirements and safe work procedures

- 2.9 Operational checks from base controls are carried out in accordance with relevant manufacturer requirements and safe work procedures
 - 2.10 All platform controls are located, identified and tested in accordance with manufacturer requirements and safe work procedures
 - 2.11 All damage and defects are reported and appropriate action is taken to rectify in accordance with manufacturer requirements and safe work procedures
 - 2.12 EWP logbook is inspected and is correct for the EWP, is completed and signed in accordance with manufacturer requirements and safe work procedures
 - 2.13 Weather and work environmental conditions are assessed to determine any impact on EWP operation and positioning as per workplan in accordance with manufacturer requirements and safe work procedures
- 3 **Perform work/task**
 - 3.1 Relevant hazard prevention/control measures identified are checked for implementation in accordance with safe work procedures
 - 3.2 EWP is safely located at point of work in work area in accordance with safe work procedures
 - 3.3 EWP platform is positioned for work tasks and stability and all operations are monitored constantly in accordance with safe work procedures
 - 3.4 Work gear and tools are stowed and secured in accordance with safe work procedures
 - 3.5 EWP is operated using all movements in accordance with safe work procedures and manufacturer requirements
 - 3.6 Unplanned and unsafe situations are responded to in accordance with safe work procedures

3.7 All communication signals are correctly interpreted and followed whilst EWP is operated in accordance with safe work procedures

3.8 EWP platform is accessed and egressed in accordance with safe work procedures and manufacturer requirements

3.9 EWP is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures

4 Pack up

4.1 Post-operational EWP checks are carried out in accordance with manufacturer requirements and safe work procedures

4.2 EWP boom is retracted, lowered, stowed and secured in accordance with manufacturer requirements and safe work procedures

4.3 Safety equipment and PPE is disconnected from platform in accordance with safe work procedures

4.4 Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures

4.5 Outriggers and/or stabilisers, plates or packing if fitted are stowed and secured in accordance and with manufacturer requirements and safe work procedures

4.6 EWP is shut down in accordance with manufacturer requirements and safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Links

Companion Volume Implementation Guide -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- advising relevant person/s on site in relation to any hazards and risk elimination/control strategies
- applying safe operating procedures for an Elevating Work Platform (EWP) including all functions within the safe working rated capacity including:
 - boom/s as low as possible and fully retracted whilst travelling (self propelled EWP only)
 - boom/s in line with EWP where practical whilst travelling (self propelled EWP only)
 - EWP stability
 - gently accelerating and braking to minimise boom/s swing (self propelled EWP only)
 - maintaining safe operating speed in relation to the work condition
 - travelling with work platform raised to an appropriate height for the terrain and visibility in relation to direction of travel (self propelled EWP only and in accordance with manufacturers specifications)
- applying emergency procedures
- applying traffic management plan procedures relevant to their role in the work area
- carrying out operational checks on EWP including:
 - testing of all EWP safety devices
 - all controls are located, identified and tested for functionality from the base controls and platform controls
 - hazard warning systems including travel beepers and lights are functional
 - start-up is in accordance with manufacturer requirements
 - steering, transmission and brake functions comply with operating requirements (self

- propelled EWP only)
- there are no unusual noises
- carrying out pre-start checks, including visual inspection which must include:
 - battery fluid level as required by manufacturer requirements
 - checking compliance plate is relevant to the load/s being used on the EWP
 - engine / mechanical fluid level checks as required by manufacturer requirements
 - ensuring availability of correct logbook and updating records as required
 - ensuring EWP platform and attachment/s fitted in platform are secured
 - evidence of damage
 - fluid leaks
 - lights are working effectively (where fitted)
 - safety equipment checks
 - signage and labels to ensure they are visible and legible
 - structural weaknesses including paint separation or stressed welds
 - wheels and tyres for damage/correct inflation if applicable
- checking compliance plate and load chart for reach requirements and load suitability
- clarifying workplan and checking understanding
- complying with Commonwealth, State and/or Territory work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) legislation and regulations
- controlling and operating a boom type elevating work platform ensuring movements and control functions are safe, smooth and comply with operating requirements including:
 - any combination of the movement of the extending boom used to support a platform on which personnel, equipment and materials are elevated to perform the work task/s
 - avoidance of ground depressions
 - correctly using observer guidance of work platform, main chassis and extending boom
 - demonstrating the safe operation of an EWP in forward and reverse, while maintaining visibility (where applicable)
 - driving (where applicable) applicable to conditions and moving platform and load/s safely
 - ensuring warning devices are functioning correctly
 - interpreting directional arrows correctly on platform controls during forward, reverse, left and right
 - lowering boom to its resting position
 - monitoring platform, main chassis and extending boom movement constantly ensuring safe work procedures are followed
 - raising platform and slewing within manufacturer requirements
 - raising platform to its full extent or 75% of the maximum height capacity (whichever is greater)
 - stability of the EWP and the work platform
 - manoeuvring and positioning the platform to perform work task/s safely whilst at its full extent or a minimum height of 75% of the maximum capacity (whichever is greater)

- conducting and applying hazard identification and risk elimination or minimisation strategies including:
 - barricades and controls to prevent the risk of collision with people, moving vehicles and fixed structures
 - environmental conditions including:
 - wind
 - lightning
 - water impacted ground
 - rain
 - extreme heat
 - Ultra Violet (UV) exposure
 - ground conditions (surface and slopes) and assessing work area operating surface suitability based on machine and task requirements
 - overhead hazards including electric lines and service pipes
 - personal protective equipment (PPE)
 - restricted areas and crush points from work platform and external surroundings
 - safety related tags on electrical switches/isolators that have an impact on point of work of EWP operator
 - sufficient lighting
 - suitable area for set-up, positioning and safely operating EWP
 - suitable firm and stable operating surface
 - use of safety observer
- entering work platform correctly including:
 - lowering platform safely and stably to appropriate height to access safely
 - clipping on of fall restraint/arrest device
 - accessing platform safely
- exiting work platform correctly including:
 - lowering platform safely and stably to appropriate height to egress safely
 - unclipping of fall restraint/arrest device
 - exiting platform safely
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- inspecting and using relevant safety equipment, including:
 - anchor point/s
 - emergency retrieval system from base controls and platform controls where fitted
 - energy absorber/s
 - lanyard/s
 - safety harness/es
- interpreting and confirming relevant documentation, workplace instructions, safety information and emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various work environmental conditions

- maintaining communication with other workplace personnel using appropriate workplace procedures including procedures to ensure all movements are conveyed clearly and succinctly including:
 - 2-way radio
 - audible and visual warning devices
 - making and interpreting hand signals
 - questioning to confirm understanding
 - signage
 - written instructions
- recording and maintaining accurate information relating to EWP operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- stabilising procedures for an EWP including:
 - checking levels
 - removing obstacles and obstructions
 - deploying and retracting outriggers (if fitted)
 - establishing correct size plates for packing (if required)
- shutting down a boom type EWP in accordance with manufacturer requirements and workplace procedures
- using and interpreting EWP manufacturer requirements and data, including compliance plate and load chart, to enable correct EWP selection for task including:
 - boom
 - platform
 - weight including outrigger load or wheel load.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and industry standards, codes of practice and guidelines to safely operate an EWP (boom length 11 metres or more) including:
 - nominal reach, measured horizontally from centre point of rotation to outer edge of platform in its most extended position
 - vertical distance from floor of platform to surface supporting elevating work platform with platform at its maximum height
- appropriate mathematical calculations to estimate loads ensuring EWP is not overloaded
- appropriate workplace communication procedures including:
 - 2-way radio
 - audible and visual warning devices
 - questioning techniques
 - signage
 - hand signals

- traffic warning systems
- written instructions
- compliance with permit condition requirements including:
 - from electrical supply authority
 - if operating on roads or footpaths
- EWP characteristics and capabilities, manufacturer requirements and instructions
- hazards including:
 - all ground and /or operating surface hazards
 - traffic including pedestrians, vehicles, other mobile plant and building structures
 - overhead hazards including electric lines, service pipes, doorways, roof beams, and lights
 - obstacles or obstructions
 - insufficient lighting
 - other relevant hazards
- identification and avoidance of person/s potential crush or entrapment points
- identification and avoidance of potential contact with overhead electrical conductor's
- identification and avoidance of potential contact with structures near work platform/boom or chassis
- impact of the following on the operation of the EWP including:
 - failure/loss of control including brakes and steering
 - failure of equipment including hydraulic system
 - EWP and platform instability due to:
 - deterioration of ground/operating surface condition
 - gradient of operating surface
 - overloading
 - poor load placement
 - irregular loads
 - emergency procedures and safety equipment, including the use of:
 - safety harness/es
 - energy absorbers
 - lanyard/s
 - anchor point/s
 - emergency retrieval systems
- lock out and tag out procedures
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions
- procedures for recording, reporting and maintaining workplace records and information
- relevant manufacturer requirements and instructions
- relevant procedures for refuelling/recharging EWP using appropriate PPE
- risk assessment process including hierarchy of control:
 - elimination

- substitution
- isolation
- engineering controls
- administrative controls
- personal protective equipment (PPE)
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations
- procedures for shutting down a boom type EWP in accordance with manufacturer requirements
- relevant documentation requirements
- suitability and lifting capability of the EWP to be used
- traffic management plan procedures and requirements
- typical routine problems encountered operating a EWP and adjustments required for correction
- wind speed factors that affect stability of EWP as per manufacturer requirements
- work area operating surface suitability including issues with:
 - backfilled ground
 - bitumen (damaged, cracked)
 - concrete (damaged, cracked)
 - hard compacted soil
 - potholes
 - railway tracks
 - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
 - soft soils
 - trench covers
- work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) and codes of practice requirements for boom type elevating work platforms
- work plan which may be verbal, documented/written, or electronically generated

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace

conditions.

- Simulators must not be used in the assessment of this unit of competency

Resources for assessment must include access to:

- appropriate boom-type elevating work platform (boom length 11 metres or more) in a safe/serviceable condition in accordance with manufacturer requirements
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
 - approved codes of practice and relevant guidance material
 - relevant Australian technical standards
 - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guide -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a vehicle loading crane with a Maximum Rated Capacity (MRC) of 10 metre tonnes or more. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Vehicle loading crane means a crane mounted on a vehicle for loading and unloading the vehicle.

A person performing this work is required to hold a vehicle loading crane HRWL.

This unit requires a person operating a slewing vehicle loading crane with a MRC of 10 metre tonnes or more to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan work/task

- 1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
- 1.2** Work area operating surface is confirmed to determine the quality of ground suitability for operational use of vehicle loading crane in accordance with workplace procedures
- 1.3** Vehicle loading crane Rated Capacity (RC) and the lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4** Appropriate paths for operating the vehicle loading crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
- 1.5** Relevant hazard identification and risk elimination/control measures are applied and advised to relevant personnel in accordance with workplace procedures
- 1.6** Traffic management plan implementation is confirmed and followed in accordance with workplace procedures
- 1.7** Appropriate communication procedures are identified and tested with associated personnel in accordance with workplace procedures
- 1.8** All tasks are confirmed to ensure requirements for the relevant work area in accordance with workplace procedures

2	Prepare for work/task	1.9	Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
		2.1	Consultation with workplace personnel is established and maintained to ensure all crane and lifting operations are clear and consistent with site requirements in accordance with a lift plan and workplace procedures
		2.2	Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
		2.3	Vehicle loading crane controls are accessed safely in accordance with manufacturer requirements and safe work procedures
		2.4	Pre-start vehicle loading crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements
		2.5	Vehicle loading crane is set up correctly with any lifting gear as per the lift plan and in accordance with relevant manufacturer requirements, including load chart/s and safe work procedures
		2.6	Boom/jib and lifting gear are set up, as required, in accordance with specific manufacturer requirements and safe work procedures
		2.7	Vehicle loading crane is stabilised appropriately in accordance with the lift plan, relevant manufacturer requirements and safe work procedures
		2.8	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
		2.9	Vehicle loading crane logbook is inspected and is correct for the crane type, is completed and signed, and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures
		2.10	Weather and work environment conditions are assessed to determine any impact on vehicle loading crane operations in accordance with manufacturer requirements and safe work procedures

3	Perform work/task	2.11	Weight of load is identified, calculated or estimated
		2.12	Derated WLL of lifting equipment resulting from selected slinging techniques is calculated
		2.13	Suitable lifting points and slinging techniques are identified
		2.14	Lifting equipment and gear is prepared for safe use
		2.15	Load destination is confirmed for stability ensuring it is able to bear the load and is prepared for safe access and landing
		3.1	Lifts are determined within the RC of the vehicle loading crane in accordance with the load chart/s and lift plan
		3.2	Boom/jib and hook block are safely positioned over the load following directions from associated personnel where applicable and in accordance with the lift plan and safe work procedures
		3.3	Lifting equipment and gear are connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements
		3.4	Test lift is carried out in accordance with safe work procedures
		3.5	Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
		3.6	Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and safe work procedures
		3.7	All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures

3.8 Load is lowered and landed safely in accordance with lift plan and safe work procedures

3.9 Lifting gear is disconnected from load and crane is positioned safely and efficiently for next task in accordance with lift plan and safe work procedures

3.10 Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported

4 Pack up

4.1 Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures

4.2 Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures

4.3 Stabilisers are stowed and secured in accordance with manufacturer requirements and safe work procedures

4.4 Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures

4.5 Plates or packing are stowed and secured in accordance with safe work procedures

4.6 Shutdown crane checks are carried out in accordance with safe work procedures and manufacturer requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package

Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC0002 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above).

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant communication signals from associated personnel
- applying relevant crane movements, including:
 - boom/jib up and down (luffing)
 - catching load swing appropriately
 - positioning and using main hook and lifting gear to connect to load safely
 - raise and lower hoist
 - slew boom/jib
 - telescope in and out
- applying relevant mathematical calculations in conjunction with lift plan and load chart to determine radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
 - boom
 - stabiliser positioning
 - type of hook
- carrying out operational checks ensuring:
 - all controls are located, identified and tested for functionality
 - all hydraulic functions are operational
 - lifting gear movements and control functions are smooth and comply with lift plan
 - hazard warning systems, safety, audible and visual warning devices are checked to ensure they are functional, including:
 - reversing beepers
 - lights
 - horns
 - start-up is in accordance with manufacturer requirements and safe work procedures
 - there are no unusual noises
 - crane control functions comply with operating requirements
- communicating with other associated personnel through using appropriate worksite procedures, including:

- two-way radio
- active listening
- demonstrating and interpreting hand signals
- questioning to confirm understanding
- signage
- whistles
- written instructions
- completing pre-start checks, including:
 - engine/mechanical fluid level checks as required by manufacturer requirements
 - presence of correct logbook
 - evidence of damage
 - fluid leaks
 - lights work effectively
 - locating, identifying and confirming all controls
 - fire extinguisher
 - safety equipment checks
 - signage and labels to ensure they are visible and legible
 - checking for signs of paint separation and stressed welds indicating potential structural weakness
 - tyres and wheels for damage/wear and correct inflation
 - updating records as required
 - visual damage or equipment faults
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation
- conducting and applying risk and hazard assessment strategies, including:
 - confirming work area operating surface suitability based on crane and task requirements
 - dynamic loads
 - ground conditions, including condition of surface and slopes
 - load swing
 - overloading
 - lifting and placing load
 - tyre pressures and tyre condition
 - asymmetric loads
 - overhead hazards, including electric lines and service pipes
 - restricted and poorly ventilated areas
 - risk of collision with people, moving plant and fixed structures
 - adequate lighting
 - traffic, including pedestrians, vehicles and other plant
 - weather conditions
- confirming and following traffic management plan procedure relevant to their role in the

work area

- identifying hazards and using appropriate risk controls and safety measures and equipment relevant to slinging loads
- selecting and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
- identifying the Working Load Limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- using lifting gear, including flexible steel wire rope (FSWR) sling, synthetic sling, chain sling (including shortener), spreader bar or lifting beam, tag line, shackles and eyebolts, and using bends and hitches when slinging, including:
 - single sheet bend
 - clove hitch
 - bowline
- determining any defects or faults with operation of crane and reporting to relevant person/s
- ensuring risk control measures within the work area are effective in accordance with workplace procedures
- identifying, isolating and tagging out defective lifting equipment, and reporting to authorised person/s
- interpreting and confirming relevant documentation for the work task and relevant area
- maintaining three points of contact whilst accessing load surface area of vehicle loading crane and ensure rungs/steps are free of hazards
- monitoring load disconnection from hook is safe and ensuring no movement of controls or the load
- operating a vehicle loading crane configured to its Rated Capacity (RC) of 10 metre tonnes or more to lift and move four different loads using the main hook through an obstacle course using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
 - a load of >50% of the RC of the crane with a boom length of >75%, and
 - a round load with a minimum length of 3 metres and minimum weight of at least 200 kg, and
 - an asymmetrical load, and
 - stillage or cage containing loose items with a minimum weight of at least 200 kg
- positioning the vehicle loading crane for safe operation for:
 - application of the task
 - manoeuvring in the workplace
 - stability of the vehicle loading crane and the load
- positioning vehicle loading crane in relevant area for next task
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- setting up and validating an exclusion zone
- shutting down a vehicle loading crane in accordance with manufacturer requirements and safe work procedures
- stabilising a vehicle loading crane for operation by:

- correctly positioning plates or packing
- deploying stabilisers
- establishing correct size plates or packing in accordance with lift plan
- levels are checked
- test-lifting load just clear of lifting plane to allow for checks to be safely made to ensure:
 - slinging is correct
 - all crane equipment is functioning properly
 - load centre of gravity is correct
 - loads of unusual shape or weight distribution are correctly slung
- using communications signals, including:
 - hoist down - hand and whistle and radio
 - hoist up - hand and whistle and radio
 - luff boom down - hand and whistle and radio
 - luff boom up - hand and whistle and radio
 - slew left - hand and whistle and radio
 - slew right - hand and whistle and radio
 - stop - hand and whistle and radio
 - telescope in - hand and whistle and two-way radio (where manufacturer requirements allow)
 - telescope out - hand and whistle and two-way radio (where manufacturer requirements allow).

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate worksite communication procedures, including:
 - listening
 - hand signals
 - questioning techniques
 - signage
 - two-way radios
 - written instructions
 - whistles
- characteristics and impact of factors affecting vehicle loading crane stability whilst moving loads, including:
 - overloading
 - poor load placement
 - asymmetric loads
 - tyre deflation/condition

- crane, lifting gear load chart/s and manufacturer requirements
- hazards, including:
 - pack up and crane stability, crane tipping and demolition sites
 - ground stability, including ground condition, recently filled trenches and slopes
 - insufficient lighting
 - obstacles or obstruction
 - other specific hazards and dangerous materials
 - overhead hazards, including:
 - electric lines
 - service pipes
 - fixed structures
 - vegetation (trees)
 - traffic, including pedestrians, vehicles and other plant
 - operations on unusual, uneven or difficult terrains
- lift impacting factors, including:
 - centre of gravity
 - dynamic nature of load
 - flex/deflexion of load
 - length
 - radius of lift
 - weight
- manufacturer requirements on stabiliser procedures
- manufacturer requirements and instructions on shutting down and packing up crane
- mathematical calculations to:
 - estimate loads
 - establish radius requirements
 - determine relevant lifting gear to perform work/task
- pre-start and operational checks required for a vehicle loading crane
- problems and appropriate response procedures to unplanned and/or unsafe situations and environmental conditions
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- relevant workplace instructions, safety information and emergency procedures
- risk assessment management and mitigation strategies, including hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - personal protective equipment (PPE)

- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements and safe work/workplace procedures
- hazards commonly encountered while slinging:
 - instability of landing surfaces
 - overhead and underground hazards
 - insufficient lighting
 - traffic
 - weather
 - pedestrian traffic
 - work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
 - Flexible Steel Wire Rope (FSWR) sling
 - synthetic sling
 - chain sling (including shortener)
 - spreader bar or lifting beam
 - tag line
 - shackles
 - eyebolts
- methods of making temporary connections to loads using fibre and/or synthetic ropes:
 - single sheet bend
 - clove hitch
 - bowline
- stability of load and avoidance of hazards, including:
 - allowing for boom deflection
 - boom/jib as low as possible
 - crane stability
 - gently accelerating and braking on slew/boom to minimise load swing
 - lowering load safely onto appropriate dunnage taking into consideration swing and restrictions of area
 - minimum boom/jib length
 - minimum speed
 - using handheld tag lines as required
 - identification of incorrect sling of load
- starting procedure of crane in accordance with manufacturer requirements
- set-up of:
 - jib
 - fly jib (where fitted)
- vehicle loading crane characteristics and capabilities to allow crane configuration to suit a range of loads
- weather bureau forecasts and environmental conditions that could impact operation,

including:

- lightning
- wind
- water impacted ground
- ultraviolet (UV) exposure
- work area suitability based on relevant ground reports, including:
 - backfilled ground
 - bitumen
 - concrete
 - hard compacted soil
 - pre-contaminated soils
 - rock
 - rough, uneven ground
 - soft soils
- workplace standards, requirements, policies and procedures for conducting operations for the vehicle loading crane.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- vehicle loading crane with a RC of 10 metre tonnes or more in safe/serviceable working order in accordance with manufacturer specifications
- appropriate loads as outlined in the Performance Evidence requirements
- communication equipment, including:
 - two-way radios
 - whistles
- relevant personal protective equipment (PPE)
- relevant documentation for operating a vehicle loading crane with an RC of 10 metre tonnes or more, including:

- approved codes of practice and relevant guidance material
- relevant Australian technical standards
- manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

TLILIC0040 Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate a non-slewing mobile crane with a Rated Capacity (RC) exceeding three tonnes safely, in accordance with all relevant legislative responsibilities. Competence in this unit, does not in itself result in a High Risk Work Licence (HRWL) to operate this plant. Competence in this unit does not allow for driving an articulated mobile crane on a main or public road. In order to drive on a main or public road, a valid heavy vehicle licence, issued by a transport regulator, is required.

Non-slewing mobile crane means a mobile crane incorporating a boom or jib that cannot be slewed, and includes:

- an articulated mobile crane
- a locomotive crane
- but does not include vehicle tow trucks.

A person performing this work is required to hold a non-slewing mobile crane HRWL.

This unit requires a person operating non-slewing mobile crane with an RC exceeding three tonnes to:

- plan the work/task
- prepare for the work/task
- perform work/task
- prepare to drive an articulated mobile crane on road
- drive an articulated mobile crane
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency. This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licensing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan work/task

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
- 1.2 Work area operating surface is confirmed to determine the quality of ground suitability for operational use of non-slewing mobile crane in accordance with workplace procedures
- 1.3 Non-slewing mobile crane RC and the lifting gear working load limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4 Appropriate paths for operating the mobile crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
- 1.5 Relevant hazard identification and risk elimination/control measures are applied and advised to associated personnel in accordance with workplace procedures
- 1.6 Traffic management plan implementation is confirmed and followed in accordance with workplace procedures
- 1.7 Appropriate communication procedures are identified and tested with associated personnel in accordance with workplace procedures

	1.8	All tasks are confirmed to ensure requirements for the relevant work area in accordance with a lift plan and workplace procedures
	1.9	Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
2 Prepare for work/task	2.1	Consultation with workplace personnel is established and maintained to ensure lift plan is clear and consistent with site requirements in accordance with a lift plan and workplace procedures
	2.2	Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
	2.3	Non-slewing mobile crane is accessed safely in accordance with manufacturer requirements and safe work procedures
	2.4	Pre-start crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.5	Mobile crane is set up correctly with any lifting gear in accordance with lift plan, relevant manufacturer requirements, including load charts, and safe work procedures
	2.6	Fly jib (if fitted) is set up as required in accordance with specific manufacturer requirements and safe work procedures
	2.7	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.8	Crane logbook is checked to confirm current compliance is correct for the crane type, is completed and signed and required rectifications have been signed-off in accordance with manufacturer requirements and safe work procedures
	2.9	Weather and work environment conditions are assessed to determine any impact on mobile crane operations in

accordance with manufacturer requirements and safe work procedures

2.10 Weight of load is identified, calculated or estimated

2.11 Derated WLL of lifting equipment resulting from selected slinging techniques is calculated

2.12 Suitable lifting points and slinging techniques are identified

2.13 Lifting equipment and gear are prepared for safe use

2.14 Load destination is confirmed for stability ensuring it is able to bear the load and is prepared for safe access and landing

3 Perform work/task

3.1 Lifts are determined within the RC of the non-slewing mobile crane in accordance with the load chart/s and lift plan

3.2 Boom/jib and hook block are safely positioned over the load following directions from associated personnel in accordance with the lift plan and safe work procedures

3.3 Lifting equipment and gear, where required, are connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements

3.4 Test lift is carried out in accordance with safe work procedures

3.5 Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures

3.6 Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and safe work procedures

3.7 All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures

3.8 Load is lowered and landed safely in accordance with lift plan and safe work procedures

3.9 Lifting gear is disconnected from load and crane is positioned safely and efficiently for next task in

- accordance with lift plan and safe work procedures
- 3.10** Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported
- 4 Prepare to drive an articulated mobile crane**
- 4.1** Any items on the crane body are safely and effectively restrained and loose components are stored in storage areas
- 4.2** Pre-operational checks, including registrations and approvals, are completed for driving according to manufacturer instructions
- 4.3** Tyre pressures and suspension settings are checked and set for driving and counterweights are positioned for road travel
- 4.4** Boom and fall block are positioned for driving
- 4.5** Appropriate signage, lights and equipment are checked for operational effectiveness and for conformity to prescribed traffic regulations or site traffic management plan
- 5 • Drive an articulated mobile crane**
- 5.1** Articulated mobile crane is started, steered, manoeuvred, positioned and stopped in accordance with regulations, manufacturer instructions and relevant vehicle handling procedures and allowing for forward overhang of the boom
- 5.2** Steering is maintained utilising ‘turn-in-turn-out’
- 5.3** One-handed steering techniques are applied
- 5.4** Braking system of articulated mobile crane is managed and operated efficiently to ensure effective control of vehicle under all conditions and allowing for greater stopping distance due to size, weight and forward projection of the boom
- 5.5** Driving hazards are identified and/or anticipated and avoided or controlled through low risk driving
- 6 Pack up**
- 6.1** Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures
- 6.2** Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe

work procedures

- 6.3 Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
- 6.4 Post-operational crane checks are carried out in accordance with legislative responsibilities, safe work procedures and manufacturer requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces but is not equivalent to TLILIC0018 Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity).

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0040 Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- anticipating and monitoring hazards particular to driving an articulated mobile crane and taking appropriate actions
- applying precautions and required actions to eliminate, minimise or control identified hazards
- applying relevant mathematical calculations in conjunction with lift plan and load chart, radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
 - boom
 - fly-jib (where fitted)
 - line pull
 - travelling
 - type of hook
 - side slope derations
 - articulation derations
- applying relevant crane movements, including:
 - boom/jib up and down (luffing)
 - positioning and using main and auxiliary hook and lifting gear to connect to load safely
 - raising and lowering hoist
 - telescope in and out
 - travelling and articulating (as required)
- applying relevant procedures that reflect legislative requirements
- carrying out pre-operational vehicle checks for road driving including:
 - brakes
 - operation of vehicle lights and indicators
 - tyre pressures
 - items on the crane restrained
 - boom and hook
 - visually checking vehicle for roadworthiness
 - checking Certificate of Registration for currency

- communicating effectively with others
- communicating with other workplace personnel through using appropriate worksite procedures, including:
 - two-way radio
 - listening
 - making and interpreting hand signals
 - questioning to confirm understanding
 - signage
 - verbal language
 - visual aids
 - whistles
 - written instructions
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation and safe work procedures
- completing pre-start checks, including:
 - battery power level as required by manufacturer requirements
 - engine/mechanical fluid level checks as required by manufacturer requirements
 - presence of correct logbook
 - evidence of damage
 - fluid leaks
 - lights work effectively
 - locating, identifying and confirming all controls
 - mirrors and seat are adjusted appropriately
 - safety equipment checks
 - signage and labels to ensure they are visible and legible
 - checking for signs of paint separation and stressed welds indicating potential structural weakness
 - tyres and wheels for damage/wear and correct inflation (water/air)
 - updating records as required
 - visual damage or equipment faults
- conducting and applying risk and hazard strategies, including:
 - confirming work area operating surface suitability based on crane and task requirements
 - articulation of crane
 - dynamic loads
 - ground conditions, including surface and slopes
 - impact of tyre inflation/condition
 - load swing
 - overloading
 - pick and placement of load
 - asymmetric loads

- overhead hazards
- restricted site/s and poorly ventilated area/s
- risk of collision with people, moving plant and fixed structures
- adequate lighting
- weather conditions
- completing operational checks ensuring:
 - all controls are located, identified and tested for functionality
 - all hydraulic functions are operational
 - lifting gear movements and control functions are smooth and comply with lift plan
 - hazard warning systems, safety, audible and visual warning devices are checked to ensure they are functional, including:
 - reversing beepers
 - lights
 - horns
 - rated capacity (RC) indicator alarm (where fitted)
 - anti-two block alarms (where fitted)
 - start-up is in accordance with manufacturer requirements and workplace procedures
 - there are no unusual noises
 - steering, transmission and brake functions comply with operating requirements
- confirming and following traffic management plan procedures relevant to crane operator role in the work area
- confirming appropriate lifting gear and slinging techniques to the type of load, its mass and centre of gravity
- confirming the working load limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- determining any defects or faults with operation of crane and reporting to relevant person/s
- driving without a load, including handling an articulated mobile crane set up for road driving through an obstacle course on a private road or premises, which includes:
 - observation techniques, including:
 - compensating for blind spots
 - ensuring that you have clear view
 - use of a spotter
 - left and right turns
 - accelerating and braking
 - operating vehicle controls, instruments and indicators where relevant
 - positioning for stopping and stopping safely
 - reversing
 - steering and manoeuvring
 - accounting for forward projection
- ensuring risk control measures within the work area are effective in accordance with workplace procedures

- ensuring stability of load and avoidance of hazards, including:
 - allowing for boom deflection
 - boom/jib as low as possible
 - boom/jib in line with crane
 - carrying load near to ground surface
 - crane stability whilst manoeuvring load into position with drive/steering wheels and articulating as required
 - gently accelerating and braking to minimise load swing
 - lowering load safely and stably onto appropriate dunnage taking into consideration swing and restrictions of area
 - minimum boom/jib length
 - minimum speed
 - using handheld tag lines/bridling
- following directions of dogger or rigger
- identifying hazards and using appropriate risk controls and safety measures and equipment relevant to slinging loads
- interpreting and confirming relevant documentation for the work task and relevant area
- inputting crane configuration into RC indicator (where fitted) and checking operation to accurately reflect crane configuration
- interpreting and acting on communications signals, including:
 - hoist down - hand and whistle and radio
 - hoist up - hand and whistle and radio
 - luff boom down - hand and whistle and radio
 - luff boom up - hand and whistle and radio
 - articulate left - hand and whistle and radio
 - articulate right - hand and whistle and radio
 - stop - hand and whistle and radio
 - telescope in - hand and whistle and two-way radio
 - telescope out - hand and whistle and two-way radio
 - travel - hand and radio
- maintaining three points of contact whilst accessing crane and ensure rungs/steps are free of hazards
- monitoring load disconnection from hook is safe and ensuring no movement of controls
- observing relevant communication signals from relevant person
- operating an articulated non-slewing mobile crane with a RC of 12 tonnes or greater to lift four different loads using the main hook of which three are through an obstacle course using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
 - a stationary load of >50% of the RC of the crane with a boom length of >75%, and
 - mobile a round load with a minimum diameter of 300 mm and minimum length of 3 metres that requires a dogger to sling, and

- mobile an asymmetrical load that requires a dogger to sling, and
- mobile with a load of stillage containing at least 10 scaffolding standards or containing a load of steel pipes of equivalent weight that requires a dogger to sling and a boom length of <75%
- planning for and managing load stability, including:
 - confirming and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
 - confirming the WLL tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- positioning the non-slewing mobile crane for safe operation for:
 - application of the task
 - manoeuvring in the workplace
 - aligning of crane boom to the load
 - stability of the non-slewing mobile crane and the load whilst driving to load set-down position
- preparing vehicle for on-road driving
- reading and interpreting relevant instructions, procedures, information and signs
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on-site risk control measures that are not in place or deficient
- setting up of:
 - fly jib (where fitted)
 - manual boom section (where fitted)
- setting up and validating an exclusion zone
- shutting down a non-slewing mobile crane in accordance with manufacturer requirements and workplace procedures
- stabilising a non-slewing mobile crane for operation by ensuring level and articulation (if required) is checked and within deration load chart requirements
- test-lifting load just clear of lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure:
 - slinging is correct
 - all crane equipment is functioning properly
 - load centre of gravity is correct
 - loads of unusual shape or weight distribution are correctly slung
- test-lifting load just clear of lifting plane to allow for checks of RC indicator (where fitted) to ensure:
 - load measuring equipment can be used to verify calculated weight of load
 - near capacity loads do not overload crane.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate worksite communication procedures, including:
 - listening
 - hand signals
 - questioning techniques
 - signage
 - two-way radios
 - written instructions
 - whistles
- characteristics and impact of factors affecting non-slewing mobile crane stability whilst mobilising loads, including:
 - side slope derations
 - articulation derations of crane
 - correct tyre pressure (inflation/condition)
 - driving safely on roadways
 - pick up and carry the load
- confirming and following a traffic management plan, pre-operational checks carried out on articulated mobile crane prior to driving on road and related actions
- crane and lifting gear load chart/s and manufacturer requirements
- crane configuration mathematical calculations to:
 - estimate loads
 - establish counterweight/s requirements (where fitted)
 - establish radius requirements
- driving hazards related to the vehicle characteristics of articulated mobile cranes and related low risk driving techniques
- hazards commonly encountered while slinging:
 - instability of landing surfaces
 - overhead and underground hazards
 - insufficient lighting
 - traffic
 - weather
 - pedestrian traffic
 - work at heights
- hazards, including:
 - pack up and crane stability, crane tipping and demolition sites
 - ground stability, including ground condition, recently filled trenches and slopes
 - insufficient lighting
 - obstacles or obstruction
 - catching load swing appropriately
 - other specific hazards and dangerous materials
 - overhead hazards, including:

- electric lines
- service pipes
- fixed structures
- vegetation (trees)
- traffic, including pedestrians, vehicles and other plant
- operations on unusual, uneven or difficult terrains
- operators under instruction
- impact of factors affecting non-slewing mobile crane stability, including:
 - overloading
 - pick up and placement of load
 - unbalanced loads
 - articulation of crane
 - correct tyre pressures (inflation/condition)
 - side slope derations
- lift-impacting factors, including:
 - centre of gravity
 - dynamic nature of load
 - deflection of boom
 - length
 - radius of lift
 - weight
 - side slope derations
 - articulation derations of crane
 - tyre inflation pressures
- manufacturer requirements and instructions on shutting down and packing up crane
- methods of making temporary connections to loads using fibre and synthetic ropes:
 - single sheet bend
 - clove hitch
 - rolling hitch
 - bowline
- mobile non-slewing crane characteristics and capabilities to allow crane configuration to suit a range of loads
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- relevant lifting gear to perform work/task
- relevant national and state/territory driver licensing authority road rules, regulations, permit and licence requirements related to articulated mobile crane operation
- relevant workplace instructions, safety information and emergency procedures
- risk assessment management and mitigation strategies, including hierarchy of control:
 - elimination

- substitution
- isolation
- engineering controls
- administrative controls
- personal protective equipment (PPE)
- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements and safe work/workplace procedures
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
 - chain sling (including shortener)
 - eyebolts
 - flexible steel wire rope (FSWR) sling
 - lifting clutches
 - shackles
 - spreader bar or lifting beam
 - synthetic sling
 - tag line
- pre-start and operational checks required for a non-slewing mobile crane
- principles of driving an articulated mobile crane on roads including:
 - operational principles of an articulated mobile crane
 - driving hazards related to the vehicle characteristics of articulated mobile cranes
 - articulated mobile crane vehicle controls, instruments and indicators, and their use
 - safe driving strategies:
 - emergency stopping
 - forward projection of the boom
 - lateral instability
 - manage vehicle speed
 - positioning and stopping
 - reversing
 - steering and manoeuvring
 - steering oscillation (in the event of speed wobbles)
- problems and applying appropriate response procedures to unplanned and/or unsafe situations and environmental conditions
- starting procedure of crane in accordance with manufacturer requirements
- set up of:
 - jib
 - fly jib (where fitted)
 - manual boom section (where fitted)
- weather bureau forecasts and environmental conditions that could impact operation
- workplace standards, requirements, policies and procedures for conducting operations for the mobile non-slewing crane

- work area suitability based on relevant ground reports including:
 - backfilled ground
 - bitumen
 - concrete
 - hard compacted soil
 - pre-contaminated soils
 - rock
 - rough, uneven ground
 - soft soils.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Simulators must not be used in the practical assessment of this unit of competency.

Resources for assessment must include access to:

- adequate area to allow for manoeuvring through an obstacle course as defined within the Performance Evidence
- appropriate loads as outlined in the Performance Evidence requirements
- associated personnel to sling and direct loads, including:
 - licenced dogger or rigger
- communications equipment, including:
 - two-way radios
 - whistles
- non-slewing articulated mobile crane with an RC 12 tonnes or greater in safe/serviceable/roadworthy working order in accordance with manufacturer specifications (side by side seats is preferred)
- personal protective equipment (PPE)
- relevant documentation for operating a non-slewing mobile crane over 3 tonnes, including:
 - approved codes of practice and relevant guidance material
 - relevant Australian technical standards
 - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to apply work health and safety (WHS)/occupational health and safety (OHS) regulations and codes of practices in the electrotechnology workplace.

It includes applying safe working practices, following workplace procedures for hazard identification and risk control. It also includes electrotechnology worker responsibilities and application for health and safety, risk management and adherence to safety practices as part of electrotechnology work functions when preparing to enter a work area.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to enter an electrotechnology workplace	1.1 Work area access permits are obtained from appropriate person/s in accordance with workplace procedures

	1.2	Relevant workplace WHS/OHS safety regulations and codes of practices are identified and followed when entering the electrotechnology work area
	1.3	Safe work methods for controlling risks are obtained, read and applied prior to undertaking work activity in accordance with WHS/OHS workplace procedures
	1.4	Preparation for electrical and non-electrical isolation is carried out to prevent creation of hazards from loss of machine/system/process control in accordance with WHS/OHS workplace procedures
	1.5	Tools, equipment and chemicals required for the electrotechnology work are checked for safety and correct functionality in accordance with workplace procedures and regulatory requirements
	1.6	Personal protective equipment (PPE) is worn appropriate to the electrotechnology work area and in accordance with workplace procedures
2	Apply safe electrotechnology working practices	
	2.1	Risk control work measures are implemented in accordance with WHS/OHS workplace procedures
	2.2	Procedures for dealing with accidents, fires and emergencies are followed in accordance with workplace procedures, scope of responsibility and capabilities
	2.3	Safe work methods are applied when working at heights including safe and effective use of safety equipment
	2.4	Safe work methods are used when undertaking lifting, lowering, pushing, pulling, carrying or otherwise moving, holding or restraining workplace tasks in accordance with relevant code of practice
	2.5	Safe work methods for removing an electric shock victim from a live electrical situation are demonstrated in accordance with workplace emergency management procedures
	2.6	Working area is kept clean, neat and tidy in accordance with workplace housekeeping procedures
3	Follow electrotechnology workplace procedures for hazard identification and	
	3.1	Hazards are identified, control measures implemented and reviewed through regular active participation in the consultation process with employer and other employees

risk control

- 3.2** Hazards in the work area are identified and reported to relevant person/s in accordance with workplace procedures
- 3.3** WHS/OHS documentation and incident records are completed in accordance with regulatory requirements and workplace procedures
- 3.4** Workplace instructions are followed in accordance with regulatory requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) regulations, legislation, codes of practices and procedures in the workplace, including:
 - identifying typical hazards associated with work environments and assessing risk/s in an electrotechnology workplace
 - applying and reviewing risk control measures to minimise, control or eliminate identified hazards
 - reporting hazards to relevant person/s
 - applying safe working practices/methods
 - contributing to WHS/OHS consultative processes
- following relevant workplace emergency management procedures and instructions relating to WHS/OHS and emergency incidents
- selecting and using appropriate personal protective equipment (PPE)
- applying correct manual handling techniques
- confirming (safe) isolation of an electrical supply and isolation of potential electrical and non-electrical hazards has been completed by an authorised person
- demonstrating safe methods of removing an electric shock victim from a live electrical situation
- selecting an appropriate ladder for a given situation and performing a safety check before use
- completing relevant WHS/OHS documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- effective verbal and written communication techniques
- electrotechnology work environment, including:
 - appropriate fire extinguisher for a given type of fire
 - commonly used workplace safety signs

- relevant industry standard for safe workplace procedures
- risk assessment documentation
- typical hazards associated with a range of work environments
- use of fire extinguishers
- housekeeping and potential hazards in relation to improper housekeeping
- workplace procedures used to control the risks associated with workplace hazards
- legal requirements relevant to WHS/OHS in the workplace, including:
 - appropriate personal protective equipment (PPE)
 - asbestos awareness and reporting hazardous gases, including supervisory requirements and duty of care
 - difference between hazards and risks
 - duty holder responsibilities, as specified in WHS/OHS Acts, regulations and codes of practice
 - employer and employee responsibilities, rights and obligations
 - general aims and objectives of the relevant state or territory legislation relating to WHS/OHS
 - hazards that may be present in the electrotechnology workplace, the harm they can cause and how this harm occurs
 - housekeeping and potential hazards in relation to improper housekeeping
 - major functions of safety committees and representatives
 - powers of health and safety inspectors
 - relevant WHS/OHS regulations, codes and practices
 - underlying principles of WHS
- life support - cardiopulmonary resuscitation (CPR) in the workplace, including:
 - first aid
 - responsibilities of the first aider
 - priorities of first aid management for any accident or injury
 - procedures required at an accident scene
 - legal and ethical issues, which may impact on the management of care
 - 'duty of care'
 - examination of a casualty for injuries
 - effect of cardiopulmonary arrest on the body
 - managing simulated conditions of airway obstruction, respiratory arrest and cardiopulmonary arrest
 - single and two-person CPR
 - signs and symptoms of an altered level of consciousness
 - management of simulation of a casualty with an altered level of consciousness
 - signs and symptoms of shock
 - management of simulation of a casualty in shock
- relevant safe work method statements (SWMS)/job safety analysis (JSA) or risk mitigation processes, including:

- emergency management plan
- hierarchy of WHS/OHS hazard risk control measures
- principles of risk assessment/management and required documentation
- typical hazards associated with electrotechnology work environments and their control, including:
 - asbestos, including:
 - common types of asbestos containing building materials
 - warning signs used to identify the presence of asbestos
 - effects of asbestos on the human body
 - requirements for reporting the presence of asbestos
 - silica, including:
 - types of materials that contain crystalline silica (silica dust)
 - methods of releasing silica dust
 - recommended levels of exposure to crystalline silica
 - effects of crystalline silica on the human body
 - hazardous gases
 - chemicals in the workplace, including:
 - hazardous substances and dangerous goods and their classifications
 - labelling and storage requirements for chemicals
 - purpose and interpretation of safety data sheets (SDS)/material safety data sheets (MSDS)
 - confined spaces, including:
 - control measures for working in a designated confined space
 - hazards associated with working in a confined space
 - workplace situations that could be classified as a confined space
 - physical and psychological hazards, including excessive noise, vibration, thermal stress, radiation, lasers, occupational overuse syndrome, stress, drugs and alcohol
 - safe manual handling principles, including:
 - procedures and methods for manual handling
 - situations that may cause manual handling injuries
 - types of manual handling injuries and their effect
 - working at heights, including:
 - hazards and precautions associated with working on ladders, elevated work platforms (EWP) and scaffolds
 - identification of work area as a height risk and use appropriate safety equipment to prevent a fall
 - working safely with electricity, including:
 - effects of electric shock on the human body
 - protection offered by a residual current device (RCD)
 - need for ensuring the (safe) isolation of an electrical supply

- appropriate method of removing an electric shock victim from a live electrical situation
- precautions that can minimise the chance of electric shock (earthing, extra-low voltage (ELV), fuses, circuit breakers and RCDs)
- common causes of electrical accidents.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, emergency management plan, equipment specifications, regulations, codes of practice and operation manuals
- relevant WHS/OHS legislation, regulations and codes of practice related to hazards management in the electrotechnology industry and workplace.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0008 Carry out preparatory energy sector work activities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to carry out preparatory energy sector work activities.

It includes planning and carrying out energy sector work support activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan energy sector support activity

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are obtained and applied
- 1.2** WHS/OHS hazards are identified, risks assessed and control measures implemented for energy sector work preparation

- 1.3 WHS/OHS hazards not previously identified are noted on job safety assessments and advice is sought from work supervisor
 - 1.4 Work instructions are obtained and the nature, scope and location of work is determined from the supervisor or appropriate person/s
 - 1.5 Advice is sought from supervisor or appropriate person/s to ensure work is coordinated effectively with others
 - 1.6 Materials required for work are determined in accordance with workplace procedures
 - 1.7 Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety
- 2 **Undertake energy sector support activity**
 - 2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed
 - 2.2 Plant and equipment are checked in accordance with manufacturer guidelines/instructions, WHS/OHS requirements and workplace procedures
 - 2.3 Mechanical equipment is installed straight and square in the required locations and within acceptable tolerances in accordance with relevant industry standards
 - 2.4 Hand and power tools are used in accordance with safe working practices and WHS/OHS requirements and workplace procedures
 - 2.5 Work instructions are carried out under supervision
 - 2.6 Unplanned events are referred to relevant supervisor and directions are followed in accordance with workplace procedures
- 3 **Complete energy sector work activity**
 - 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
 - 3.2 Work site is cleaned and made safe in accordance with workplace procedures
 - 3.3 Supervisor is notified of work completion in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE122A Carry out preparatory energy sector work activities.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0008 Carry out preparatory energy sector work activities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using of risk control measures
- carrying out preparatory energy sector work activities in accordance with requirements, including:
 - maintaining fire integrity
 - placing and securing accessories accurately
 - routing, placing and securing cables
 - using testing devices
 - using hand and power tools safely and in accordance with workplace safe work practices
- completing energy sector work and following instructions
- planning and undertaking energy sector support activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- problem-solving techniques for unplanned situations/events
- relevant hand, fixed and portable power tools, including:
 - associated hazards
 - care and maintenance
 - cutting, shaping, drilling, threading, tapping, and finishing metallic, non-metallic and structural components
 - different types of tools and their purpose
 - requirements for use on construction sites
 - techniques for the correct and safe use
 - tools for dismantling and assembling electrical and electronic components
 - tools for measuring and marking out

- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant energy sector testing devices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies, procedures and instructions.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective (PPE) equipment currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0010 Compile and produce an energy sector detailed report

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to compile and produce an energy sector detailed report.

It includes planning; identifying information sources; collecting, analysing and formatting information applicable to the electrotechnology industry in developing and obtaining approval for energy sector report.

This unit is typically for technicians working as part of a product/application/service research and/or design, development and implementation team. This generally involves working closely with a range of management and production/operations personnel and requires balancing the business and technical sides of the research process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify energy sector report requirement	1.1 Work health and safety (WHS)/occupational health safety (OHS) requirements and workplace procedures are identified and applied
	1.2 Report writing techniques are reviewed and adopted in accordance with workplace procedures
	1.3 Scope and parameters of energy sector report are evaluated and identified in accordance with workplace procedures
	1.4 Criteria from other related works impacting on the report development are determined from relevant sources
	1.5 Report information and sources are identified, and availability and reliability of information is assessed for relevance
2 Develop energy sector report	2.1 Scenarios/requirements identified in consultation with relevant person/s and industry regulatory and job requirements are included in report
	2.2 Report is developed in collaboration with relevant person/s
	2.3 Relevant person/s is identified to assist in the compilation of the report
	2.4 Report is reviewed and adjusted to rectify anomalies
	2.5 Report is compiled in accordance with workplace policies and procedures
	2.6 Research information is analysed and compiled for the final report
3 Obtain approval for final energy sector report	3.1 Report is presented, discussed and authorised by relevant person/s
	3.2 Modifications to report resulting from presentation/discussion with authorised person/s are negotiated
	3.3 Final report is presented and approval obtained from authorised person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE124A Compile and produce an energy sector detailed report.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0010 Compile and produce an energy sector detailed report

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing energy sector report information
- applying relevant work health and safety (WHS)/occupational health safety (OHS) requirements
- collaborating with relevant person/s in compiling report
- compiling and producing an energy sector report, including:
 - identifying workplace policies and procedures
 - developing report brief incorporating scenarios and requirements
 - communicating with relevant person/s to determine report requirements
 - identifying scope and parameters of report
 - determining impact of related works
 - developing design brief incorporating scenarios and all requirements
- identifying source, availability and reliability of information for report
- obtaining approval for final energy sector report
- presenting and discussing report with relevant person/s, including presenting final report and reviewing and adjusting report to rectify anomalies
- successfully negotiating alterations to proposed report.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- communicating with personnel, including:
 - oral communications
 - written procedures and work instructions
- communicating with suppliers
- communicating with customers
- purpose and extent of maintaining work activities records in an enterprise, including:

- types of records for maintaining work activities in an enterprise
- methods for recording and maintaining work records
- work records required by regulation requirements
- using basic computer functions including:
 - starting up
 - selecting application
 - entering information
 - saving
 - printing
- techniques of analysis, including:
 - use of appropriate sampling techniques to collect data
 - types of data and classification
 - effective questionnaire design
 - data collection errors
 - frequency tables
 - statistical diagrams drawing and interpretation
 - the general shape of a frequency distribution
 - different types of diagrams
 - mean time between failures calculations
- summary of statistics, including:
 - measures of central tendency
 - measures of dispersion
 - a 5-point summary for a given data set, box and whisker plot distribution
 - data sets comparison using measures of centre and spread
 - the effect of outliers on measures of centre and spread
 - use computer programs or calculators to simplify calculations
- correlation and regression, including:
 - bivariate data and scatter diagrams
 - product-moment correlation coefficient calculation and interpretation
 - difference between causation and correlation
 - equations of regression lines from bivariate data with a calculator and line plotting on a scatter diagram
 - using the equation of regression to make predictions in practical situations
 - investigation of practical problems using correlation and regression
- investigation and reporting, including:
 - presentation of a well formatted report with a clearly stated aim
 - using the internet to obtain relevant data
 - description of the statistical method and design chosen to meet the aim of the investigation
 - statistical analysis and results reporting

- evaluation and interpretation of the results of the investigation
- discussion of the investigation with reference to real world applications
- chronology of the investigation
- analysis techniques
- collaboration and communication techniques
- presentation and negotiation skills
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- report writing techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Duplicate content removed from Knowledge Evidence.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to identify, document and apply work health and safety (WHS)/occupational health and safety (OHS) hazard and risk control measures associated with electrotechnology work.

It includes identifying workplace hazards, assigning levels of risk, developing control measures to eliminate and/or mitigate risks, reviewing risk control measures and maintaining documentation of hazards, risk control measures and their application in accordance with compliance procedures.

This unit addresses information, processes and techniques for the application of WHS/OHS, specific to working in the electrotechnology sector and is essential for workers without managerial or supervisory responsibilities.

Typically, this unit will relate to the type of job being undertaken, electrical conditions, energy levels, radiation levels, toxic substances, airborne particles, pressure discharge, explosive atmosphere, worksite location, general worksite conditions, specific work location, moving parts, tools and equipment, workers competence and/or capacity and/or personal effects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify and document hazards and risks associated with electrotechnology work

- 1.1** Hazards are identified and documented by undertaking a job analysis and worksite inspection in consultation with relevant person/s and in accordance with workplace procedures
- 1.2** Risks associated with identified hazards are assessed in consultation with relevant person/s, taking into account existing control measures and documented in accordance with workplace procedures

2 Assign levels of risk and develop and document control measures

- 2.1** Level of risk is assessed and prioritised for each identified hazard in consultation with relevant/s persons and in accordance with regulations and WHS/OHS workplace compliance procedures
- 2.2** Control measures for identified hazards are determined by applying the hierarchy of control and activities to eliminate and/or mitigate the risk
- 2.3** Level of risk is re-assessed to confirm the required control measures reduce the risk level to as low as reasonably practicable
- 2.4** Hazards risk level and control measures are agreed to in consultation with relevant stakeholders and documented in accordance with workplace procedures

3 Monitor, review and document risk control measures

- 3.1** Documented control measures are recorded in workplace risk register and made available for reference by relevant person/s
- 3.2** Control measures are reviewed and modified, as required, in consultation with relevant person/s in accordance with workplace procedures
- 3.3** Document and apply measures to control WHS/OHS risks associated with electrotechnology work

- 3.4 Changes and updates are made to relevant documentation, risk register as additional hazards are identified
- 3.5 Documentation of hazards, risks control measures and their application are filed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Documenting and applying WHS risks must be demonstrated in relation to electrotechnology installation, testing, inspection, fault finding, maintenance or development work functions and include the following:

- relevant WHS/OHS legislation, regulations and codes of practice related to devices and systems and hazards present in residential, commercial and industrial workplaces
- accepted industry work procedures and the specific safety procedures and work instructions for a particular workplace or organisation

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Duplicate content removed from Knowledge Evidence.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying measures to control work health and safety (WHS)/occupational health and safety (OHS) risks, including:
 - identifying hazards by job analysis and/or work-site inspection
 - documenting hazards
 - determining risks associated with identified hazards
 - determining the degree of risk in consultation with relevant person/s and in accordance with workplace requirements and documenting the level of risk
 - working with a group to identify effective hazard control measures
 - working with a group to modify and/or develop safe work methods
 - utilising the hierarchy of control to develop reasonably practicable control measures to eliminate or control risk
 - reassessing the level of risk and documenting the reassessed level of risk
 - documenting control measures
 - updating worksite risk register
 - monitoring, reviewing relevant control measure documentation to ensure control measures remain valid
 - reviewing job-specific and/or worksite processes to ensure control measures remain valid
 - identifying job-specific and/or worksite changes and modifying hazard, risk and control measure documentation
 - following workplace requirements for filing control measure documentation
 - identifying practical control measures for dealing with the hazards on a construction worksite
 - identifying practical control measures for dealing with the hazards of low voltage (LV)

equipment

- identifying practical control measures for dealing with the hazards of high voltage (HV).

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- risk management and assessment of risks, including:
 - principle and purpose of risk management
 - processes for conducting a risk assessment
 - hazard identification by job analysis and work-site inspection
 - recording hazards and assessing risk
- recognising and assigning a level of risk, including:
 - high (potential to kill or permanent disability)
 - medium (potential to cause an injury or illness of a permanent nature)
 - low (potential to cause a minor injury requiring first aid but no permanent disability)
 - the likelihood of an incident happening
 - risk level matrix
- identifying control measures to eliminate or control risk, including:
 - hierarchy of control measures
 - what constitutes a reasonably practicable control measure
 - monitoring and reviewing processes to ensure control measures remain valid
- control measure documentation, including:
 - job safety analysis (JSAs)
 - safe work method statements (SWMS)
 - risk registers
 - relevant industry standards
- construction site hazards, risks and control measures, including:
 - manual and mechanical handling
 - noise, dusts, gases and chemicals
 - working at heights
 - working in confined spaces
 - harmful airborne contaminants: fibres of thermal insulation, fibrous cement materials, asbestos, silica and other fibres in insulation materials
 - harmful devices: laser equipped devices, gas torches and welding equipment
 - harmful materials: gases including refrigerants, industrial cleaning agents, fibres of optical cable, thermal insulation, glues and other setting agents
- hazards, risks and control measures associated with HV, including:
 - control measures used for dealing with the hazards of HV

- parts of an electrical system and equipment where HV is likely
- the terms ‘touch voltage’, ‘step voltage’, ‘induced voltage’, ‘stored energy’ and ‘creepage’ as they relate to the hazards of HV
- Australian and New Zealand Standards (AS/NZS) requirements for safety services and issues related to HV installations
- consultation and the requirement for the use of authorised personnel for undertaking isolations, maintenance and reporting of faults (including permit requirements)
- hazards, risks and control measures associated with LV equipment, including:
 - risks in modifying electrical installations, fault finding, maintenance and repair
 - control measures before, while and after working on electrical installations, circuits and equipment
 - isolation and tagging-off procedures
 - risks, restrictions and control measures for working live
 - alternate supplies
- hazards associated with extra-low voltage (ELV), LV and high currents, including:
 - arrangement of power distribution and circuits in electrical installations
 - parts of an electrical system and equipment that operate at LV and ELV, and, where high currents are likely
- hazards, risks and control measures associated with disconnecting and reconnecting electrical equipment, including:
 - isolation and tagging-off procedures
 - alternate supplies (back-up supply and changeover switches).

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0019 Fabricate, assemble and dismantle utilities industry components

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to fabricate, assemble and dismantle utilities industry components using fitting and metal fabrication techniques.

It includes the safe use of hand tools, fixed and portable power tools; cutting, shaping, joining and fixing; using metallic and non-metallic materials; dismantling and assembling equipment; mechanical measurement and marking out; and, reading drawings/diagrams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for dismantling, assembling and fabrication work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) procedures for a given work area are identified and applied in accordance with workplace procedures

- 1.2 WHS/OHS risk control measures and workplace procedures are followed in preparation for the work
 - 1.3 Work instructions and relevant workplace procedures, industry standards, codes of practice and regulations for dismantling, assembling and fabrication are identified and applied
 - 1.4 Scope of work to be undertaken is obtained from relevant documentation and from work supervisor
 - 1.5 Advice is sought from work supervisor to ensure work is coordinated effectively with other persons
 - 1.6 Materials required for work are identified and obtained in accordance with workplace procedures
 - 1.7 Tools, equipment and measuring devices needed to carry out the work are obtained and checked for correct operation and safety
- 2 **Dismantle and assemble utilities industry apparatus**
 - 2.1 WHS/OHS risk control measures and workplace procedures for dismantling and assembling apparatus are followed
 - 2.2 Circuits/apparatus/plant are checked and isolation confirmed in accordance with WHS/OHS workplace requirements and procedures
 - 2.3 Relevant tools are selected and used correctly and safely in accordance with manufacturer instructions and workplace procedures
 - 2.4 Relevant manufacturer guides and instructions are followed when dismantling and assembling apparatus
 - 2.5 Apparatus components are marked or tagged correctly during dismantling to ensure correct and efficient reassembly in accordance with workplace procedures
 - 2.6 Dismantled components and parts are stored to protect them against loss or damage in accordance with manufacturer instructions and workplace procedures
 - 2.7 Apparatus is dismantled and assembled without waste of materials and energy, damage to apparatus, the surrounding environment or services
 - 2.8 Unplanned events are referred to supervisor for

directions in accordance with workplace procedures

2.9 Quality checks are carried out in accordance with workplace procedures

2.10 Worksite is tidied, tools and equipment cleaned and securely stored in accordance with workplace procedures

2.11 Work supervisor is notified of dismantling and assembling apparatus completion in accordance with workplace procedures

3 Fabricate utilities industry components

3.1 WHS/OHS risk control measures and workplace procedures for fabricating components are followed

3.2 Circuits/apparatus/plant are checked and isolated in accordance WHS/OHS workplace requirements and procedures

3.3 Relevant tools and equipment are selected, used correctly and safely in accordance with manufacturer instructions and workplace procedures

3.4 Drawings, diagrams and instructions for fabrication of mechanical components are followed in accordance with workplace procedures

3.5 Component dimensions are determined directly by measuring, or by calculation from information supplied in job drawings and instructions

3.6 Mechanical components are fabricated by measuring, marking out, cutting, joining and fixing accurately using relevant equipment and tools, minimising waste of materials and energy and/or damage to the surrounding environment or services

3.7 Unplanned events are referred to supervisor for directions in accordance with workplace procedures

3.8 Quality checks are carried out in accordance with workplace procedures

3.9 Worksite is tidied, tools and equipment cleaned and securely stored in accordance with workplace procedures

3.10 Work supervisor is notified of fabrication completion in

accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Hand tools must include:	• drills and drilling with different types of drills used in the electrotechnology industry • tools for holding, cutting, driving, shaping, breaking and bending materials • tools for cutting metallic and non-metallic material
Relevant workplace policies and procedures must include:	• circuits/apparatus/plant isolation procedures • workplace referral and reporting procedures
Sheet metal work must include:	• application of a range of fabrication material types • use of tools for cutting, bending, folding and punching sheet metals
Tapping and threading must include:	• tools for cutting internal and external threads to materials used for electrotechnology work
Workshop planning processes and materials must include:	• metallic and non-metallic materials used in the electrotechnology industry and their application

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE102A Fabricate, assemble and dismantle utilities industry components.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0019 Fabricate, assemble and dismantle utilities industry components

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- applying sustainable energy work practices to reduce waste when marking out
- complying with relevant electrical regulations and legislations
- consulting with work supervisor
- correctly marking, tagging and storing components during dismantling
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- drawing freehand mechanical components showing all information needed for its manufacture/fabrication
- fabricating, dismantling, assembling utilities industry components, including:
 - applying safety procedures when using holding and cutting tools
 - cutting a thread on metallic components
 - demonstrating safe use of a bench drill
 - dismantling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures
 - assembling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures
 - drilling metallic and non-metallic components
 - fabricating components using sheet metal and fabrication tools
- following manufacturer guides and instructions
- following work instructions
- holding and cutting materials accurately
- interpreting and completing workplace documentation
- interpreting mechanical drawings/diagrams and instructions used in the electrotechnology industry
- joining components using correct method and equipment
- laying out a drawing of mechanical components using engineering drawing convention

- marking out, cut, bend, drill and join sheet metal
- measuring, calculating and marking out a project accurately in accordance with workplace procedures
- selecting and using portable power tools correctly and safely
- selecting and using relevant hand tools correctly and safely
- tapping and threading metallic and/or non-metallic components
- using vernier calipers and micrometers to measure components
- maintaining a clean worksite and equipment
- modifying metal enclosures
- demonstrating safe drilling practices
- modifying plastic enclosures
- performing quality checks
- planning for dismantling, assembling and fabrication work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- mechanical drawing interpretation and sketching, including:
 - industry drawing standards of mechanical components
 - abbreviations and symbols used in drawing of mechanical components
 - interpretation of mechanical drawings commonly used in the electrotechnology industry (orthogonal projection, third angle - detail and assembly drawings, and pictorial views)
 - laying out a drawing of mechanical components using engineering drawing convention
 - freehand drawings of mechanical components showing all information needed for its manufacture/fabrication
- workshop planning and materials, including:
 - methods used to work safely in an industrial work environment
 - typical non-electrical hazards in the workplace
 - control measures for dealing with hazards identified
 - type of metallic and non-metallic materials used in the electrotechnology industry and application of the common materials
 - planning process
- measuring and marking out, including:
 - reasons for measuring and marking out
 - sustainable energy work practices related to reducing waste when marking out
- holding and cutting materials, including:
 - procedures for using a range of tools for cutting, shaping, and finishing metallic and non-metallic materials
 - safety procedures when using holding and cutting tools

- drills and drilling, including:
 - types of drills used in the electrotechnology industry
 - drilling metallic and non-metallic components
 - safe use of a bench drill
- tapping and threading including type and size of commonly used threads used in electrotechnology work
- general hand tools used in electrotechnology work
- joining techniques, including:
 - machine screws
 - welding, brazing or soldering techniques
- portable power tools in electrotechnology work, including:
 - applications of portable power tools
 - using portable power tools
 - fabricating components using power tools
 - requirements for testing and tagging cord connected electrical equipment
- compressed gas operated tools in electrotechnology work
- sheet metal work, including:
 - types of sheet metal materials used in the electrotechnology work
 - names and applications of the types of fabrication materials
 - techniques used in fabricating sheet metal, including cutting, bending, drilling/punching, joining and cutting mitres
 - marking out, cutting, bending, drilling and/or cutting and/or punching holes, joining and cutting mitred joints using sheet metal
 - sustainable energy work practices to reducing waste when fabricating using sheet metal
- low tolerance measurement, including:
 - tolerance
 - techniques in using vernier callipers and micrometers
- dismantling and assembly techniques, including procedures for ensuring the safe treatment of dismantled components
- relevant tools for specific tasks, including:
 - tapping and threading
 - general hand tools used in electrotechnology work
 - joining
 - portable electric power tools
 - dismantling and assembly techniques
 - measuring and marking out
 - holding and cutting metallic and non-metallic materials
 - sheet metal work

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0020 Fix and secure electrotechnology equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to fix, secure and mount electrotechnology equipment to hollow walls, solid walls and metal fixings.

It includes the safe use of hand and portable tools/ power tools and the selection and safe application of fixing devices and supporting accessories/equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to fix and secure electrotechnology equipment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
1.2	Hazards are identified, risks are assessed and control measures are implemented

- 1.3 Scope of work to be undertaken is obtained from relevant documentation and/or from work supervisor
 - 1.4 Advice is sought from work supervisor to ensure work is coordinated effectively with others
 - 1.5 Materials required for the work are identified and obtained in accordance with workplace procedures
 - 1.6 Fixing devices are selected for their suitability for the environment, weight of the load they are supporting and sub-stratums into which they are being installed in accordance with manufacturer specifications and safe load limits
 - 1.7 Supporting accessories/equipment are selected for their suitability for the environment and ability to support and protect from damage in accordance with workplace procedures
 - 1.8 Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety in accordance with workplace procedures
- 2 **Install fixing and support devices**
 - 2.1 Exposed and/or conductive parts, plant or machinery are confirmed as isolated in consultation with authorised person
 - 2.2 WHS/OHS risk control measures relevant to work site are followed
 - 2.3 Fixing devices are installed in accordance with manufacturer instructions, regulatory requirements and workplace procedures
 - 2.4 Support accessories/equipment are installed accurately in accordance with industry technical standards, regulatory requirements and job specifications
 - 2.5 Work is carried out without waste of materials or damage to apparatus or circuits, the surrounding environment or services and using sustainable energy practices
- 3 **Complete fixing and support work**
 - 3.1 WHS/OHS risk control measures for work completion are followed
 - 3.2 Worksite is tidied and tools and equipment cleaned and

securely stored in accordance with workplace procedures

- 3.3** Relevant personnel are notified of work completion in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Fixing and securing electrotechnology equipment must include:

- installation
- maintenance or development work functions

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE105A Fix and secure electrotechnology equipment.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0020 Fix and secure electrotechnology equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant workplace health and safety (WHS)/occupational health and safety (OHS) requirements
- applying sustainable energy principles and practices
- communicating effectively with relevant stakeholders
- completing fixing and support work to electrotechnology equipment
- completing workplace documentation
- ensuring exposed and/or conductive parts, plant or machinery are isolated by an authorised person
- installing a fixing device and accessory capable of supporting up to 20 kilograms (kg) on the metal plate
- using appropriate fixing methods, tools and devices to install fixings to hollow walls, solid walls, brick, concrete and steel
- installing, aligning and adjusting fixing devices in accordance with manufacturer instructions and load limits, including installing relevant fixing support accessories/equipment
- maintaining a clean worksite and equipment
- selecting relevant fixing devices suitable for the environment they are being installed for loads, including:
 - less-than 5 kg
 - 5-20 kg
 - 20-50 kg
- selecting the correct device for supporting, fixing and protecting wiring/cabling/piping and functional accessories
- using fixing adhesives and tapes safely in accordance with manufacturer instructions and load limits
- using power drills, including selecting and changing drill bits and drill speeds.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- devices, tools, equipment and methods for supporting, fixing and protecting electrotechnology equipment wiring/cabling/piping and functional accessories, including:
 - hollow walls, wood, masonry blocks, plasterboard and panelling
 - fixing to metal
 - solid walls, including masonry and concrete structures
 - vertical and horizontal surfaces
 - fixing adhesives and tapes
 - securing and mounting types, load limits and safe installation
 - support accessories/equipment
- relevant electrical regulations and legislations
- relevant job safety assessments or risk mitigation processes
- relevant electrotechnology equipment manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0024 Implement and monitor energy sector WHS policies and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to implement and monitor energy sector work health and safety (WHS)/occupational health and safety (OHS) policies and procedures.

It includes providing WHS/OHS information to the work group; implementing and monitoring participative arrangements for the management of WHS/OHS; and implementing and monitoring the workplace procedures for identifying hazards, assessing and controlling risks. It also includes implementing and monitoring procedures for dealing with hazardous events, WHS/OHS training, and maintaining WHS/OHS records.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

- 1 Provide WHS/OHS information to the work group**

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Relevant WHS/OHS legislation and codes of practice are explained to work group

	1.2	Relevant WHS/OHS workplace policies, procedures and programs are available in a readily accessible manner and explained to work group
	1.3	Identified hazards, risk assessments and risk control measures are identified, supplied and explained to the work group
2 Implement and monitor participative arrangements for management of WHS/OHS	2.1	Workplace procedures for consultation of WHS/OHS issues are implemented, monitored and communicated to work group
	2.2	Issues raised through consultation are dealt with and resolved promptly or referred to relevant person/s for resolution in accordance with workplace procedures
	2.3	Outcomes of WHS/OHS consultation issues are communicated to the work group
3 Implement and monitor procedures for identifying hazards, assessing risk and controlling risks	3.1	Hazards are identified, risks are assessed and control measures are implemented
	3.2	Risks control measures are implemented and adherence by work group is monitored in accordance with workplace procedures
	3.3	Inadequacies in existing risk control measures are identified in accordance with hierarchy of risk control and reported to relevant person/s
	3.4	Inadequacies in resource allocation for implementation of risk control measures are identified and reported to relevant person/s
4 Implement procedures for dealing with hazardous events	4.1	Workplace procedures for responding to hazardous events are implemented to ensure prompt control action is taken
	4.2	Hazardous events are investigated to identify their cause in accordance with workplace procedures
	4.3	Control measures to minimise risks of hazardous events based on the hierarchy of risk control are implemented or referred to relevant person/s

5 Implement and monitor procedures for WHS/OHS training	5.1	WHS/OHS training needs analysis of work group is performed to identify competency gaps
	5.2	Identified WHS/OHS training gaps are fulfilled by training programs in consultation with relevant person/s
6 Implement and monitor procedures for maintaining WHS/OHS records	6.1	WHS/OHS records for work area are completed in accordance with workplace procedures and relevant legislative requirements
	6.2	Aggregate information from work area WHS/OHS records are used to identify hazards and monitor risk control procedures in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Implementing and monitoring energy sector WHS/OHS policies and procedures must include the following attributes:

- organisation's WHS/OHS obligations
- participative arrangements
- implementation and monitoring safety information to staff
- safety procedures
- safety records maintenance
- training

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE117A Implement and monitor energy sector OHS policies and procedures.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0024 Implement and monitor energy sector WHS policies and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements in the energy sector, including:
 - communicating WHS/OHS issues with relevant person/s, and providing and explaining WHS/OHS information to a work group
 - implementing and monitoring participative arrangements for management of WHS/OHS
 - implementing and monitoring procedures for identifying hazards, and assessing and controlling risks
 - implementing and monitoring workplace procedures for WHS/OHS and maintaining records, including existing hazard register
 - implementing risk control measures using hierarchy of risk control
 - investigating hazardous events to identify causes
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- implementing procedures for dealing with hazardous events
- performing training needs analysis and identifying training gaps
- resolving WHS/OHS issues raised.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- provisions of relevant WHS/OHS legislation
- principles and practice of effective WHS/OHS management
- workplace hazards, range and selection of control measures
- organisational WHS/OHS management systems and policies and procedures needed for legislative compliance
- impact of characteristics and composition of the workforce on WHS/OHS management

- relevance of WHS/OHS management to other organisational management policies, procedures and systems
- analysis of entire work environment and judge WHS/OHS interventions
- analysis of relevant workplace data
- ability to assess resources needed for risk control
- communication techniques
- relevant WHS/OHS legislation, including:
 - resources needed for risk control
 - hierarchy of risk control measures
 - relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
 - workplace hazards, range and selection of risk control measures
- relevant workplace documentation
- relevant workplace policies and procedures
- training needs analysis.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in an energy sector workplace operational situation where it is appropriate to do so; where this is not appropriate, assessment must occur in a simulated energy sector workplace operational situation that replicates workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits.

It includes preparing to lay, laying wiring/cabling and connecting accessories for ELV circuits. It also includes completing and reporting work activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to lay wiring/cabling and connect accessories for

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures are identified and applied

ELV circuits

- 1.2 Hazards are identified, risks are assessed and control measures are implemented
 - 1.3 Safety hazards not previously identified are reported on job safety assessment and advice on risk control measures is sought from the work supervisor
 - 1.4 Location of work is obtained from relevant person/s to determine scope of work
 - 1.5 Advice is sought from relevant person/s to ensure work is coordinated with others
 - 1.6 Sources of materials required for work are determined in accordance with workplace procedures
 - 1.7 Tools, equipment and testing devices required for work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 2 **Lay wiring/cabling and connect accessories for ELV circuits**
 - 2.1 WHS/OHS workplace risk control measures for carrying out the work are followed
 - 2.2 Circuits/machines/plant are checked as isolated in accordance with workplace procedures
 - 2.3 Wiring and accessories are installed to comply with industry standards and job specifications with sufficient excess to affect terminations
 - 2.4 Accessories are installed straight and square in the required locations and within acceptable tolerances
 - 2.5 Cables and conductors are terminated at accessories in accordance with manufacturer specifications and relevant industry standards
 - 2.6 Cables installed for future service are marked and terminated in compliance with relevant industry standards and workplace procedures
 - 2.7 Unplanned events are responded to in accordance with workplace procedures and approval of immediate supervisor
 - 2.8 Cable installation and termination is carried out without wasting materials, damaging apparatus, circuits or the

surrounding environment using sustainable energy practices

3 Complete and report work activity

- 3.1** WHS/OHS completion risk control measures and workplace procedures are followed
- 3.2** Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3** Work completion is documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Laying wiring/cabling and connecting accessories for ELV power and control cabling systems circuits must include:

- at least one of the following wiring/cabling systems:
 - unenclosed thermoplastic sheathed (TPS) cable
 - enclosed thermoplastic insulated (TPI) or sheathed cables
- at least three of the following wiring/cabling systems:
 - single cable
 - flexible cable
 - flexible cord
 - shielded cable
 - ribbon cable
 - other similar and like cable

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE108A Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- applying sustainable energy principles and practices
- cleaning worksite
- completing and reporting work activities
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining nature of work activities
- installing cables and accessories to specifications
- laying wiring/cabling and connecting accessories for extra-low voltage (ELV) circuits
- marking cables for future service using workplace procedures
- notifying and documenting completion of work using workplace procedures
- obtaining location of work
- preparing to lay wiring/cabling and connecting accessories for ELV circuits
- reporting safety hazards not previously identified on job safety assessment
- seeking advice from relevant person/s
- selecting appropriate tools, equipment, testing devices, cables and accessories
- sourcing materials required for work activities
- terminating cables, conductors and accessories to manufacturer specifications and requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- cable protection and support method and accessories, including:
 - requirements to protect and support cables adequately - protection against mechanical

- damage, protection from adverse temperatures and corrosion and protection from magnetic field that may affect the performance of the cable
- cable support and protection devices, accessories and typical applications - metallic and non-metallic conduits, duct and trunking, cable ladder and tray, cable clips and ties and related accessories
- installation techniques - cable installation equipment and cable drawing and hauling techniques
- basic cable and conductor terminations, including:
 - insulation removal and replacement
 - conductor handling and cable terminations including general aspects and soldering involving pins on electronic components and stranded conductors carrying current up to 25 amperes (A)
 - application of connecting devices for conductors and terminals
 - continuity through connections and insulation resistance testing
 - stress release on cables/conductors
- environmental and heritage regulation effecting electrotechnology work, including:
 - purpose of environmental and heritage regulation
 - typical issues affecting electrotechnology services and systems
 - meeting requirements
- environmental regulations effecting electrotechnology work
- ELV wiring
- techniques for installing cables in buildings, structures and premises, including:
 - building construction method and construction sequence
 - typical cable routes through buildings, structures and premises
 - building codes affecting the installation of cables in buildings, structures and premises - limitation on penetration structural elements and maintenance of fire protection interiority
 - cable segregation requirements
- technical industry standards, regulations and codes of practice related to ELV work, including:
 - limitation imposed by regulations
 - how to read and apply a standard
- aspects of technical standards that apply to extra-low voltage work types of cables used in the electrotechnology industry and their application, including:
 - structural components of cables and their purpose - conductors and conductor material, insulation, sheathings and servings
 - application of various cables types
 - cable variates - single cables, flexible cables, flexible cords, shielded cables, armoured cables, ribbon cables, other similar and like cables
 - typical characteristics and use of power circuit cables and control circuit cables
- relevant job safety assessments, including risk control measures
- relevant manufacturer specifications
- relevant tools, equipment and testing devices

- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0035 Provide basic instruction in the use of electrotechnology apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to instruct customers/users in the use of electrotechnology apparatus.

It includes appropriate customer relations, using apparatus manufacturer instruction material, instructing methods and completing instruction documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to instruct in the use of electrotechnology apparatus

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
1.2	Hazards are identified, risks are assessed and control measures are implemented

- 1.3 Electrotechnology apparatus on which user is to be instructed is confirmed with work supervisor and/or relevant person/s
 - 1.4 Safety features and safe use of the electrotechnology apparatus are reviewed in accordance with manufacturer instructions
 - 1.5 Familiarity with the electrotechnology apparatus is gained by reference to manufacturer user instructions and applying them during a preliminary practice run through
 - 1.6 Materials required to instruct users in the use of electrotechnology apparatus are obtained in accordance with workplace procedures
- 2 **Instruct user in the use of electrotechnology apparatus**
 - 2.1 Users are informed of safety features and safe use of electrotechnology apparatus in accordance with manufacturer instructions, regulatory requirements and safe work methods
 - 2.2 Users are instructed in the set up and use of the electrotechnology apparatus in accordance with manufacturer instructions
 - 2.3 Users are given the opportunity to ask questions and demonstrate they understand the safety aspects, set-up features and operation of the electrotechnology apparatus
 - 2.4 Manufacturer user instructions and other related electrotechnology apparatus documentation are given to the appropriate person/s
 - 2.5 Unplanned events are referred to supervisor for direction in accordance with workplace procedures
 - 2.6 Instructions are given efficiently, without damage to electrotechnology apparatus, the surrounding environment or services using sustainable energy practices

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Demonstration of unit must include:

- providing instruction relevant to electrotechnology apparatus and its control

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE020B Provide basic instruction in the use of electrotechnology apparatus.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0035 Provide basic instruction in the use of electrotechnology apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- applying sustainable energy principles and practices
- communicating effectively with relevant stakeholders
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- evaluating user needs
- following manufacturer user instructions
- giving clear instructions in the safe use and features of the electrotechnology apparatus
- giving users the opportunity to ask questions and demonstrate understanding of the features and safe use of the electrotechnology apparatus
- instructing users in the use of specific items of electrotechnology equipment and systems
- obtaining relevant materials to assist with instructing users
- performing preliminary run through with apparatus to confirm familiarity
- providing users with relevant documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- customer relations purpose, techniques and procedures
- effective communication, including:
 - communicating with customers and suppliers
 - oral communication
 - written procedures and work instructions
- effective instructional techniques
- methods for evaluating user ability in the use of electrotechnology apparatus

- methods for evaluating user instructional needs
- procedures for dealing with customers and customer issues
- relevant electrotechnology apparatus instruction, including how it is used efficiently and safely
- relevant manufacturer instructions and user material
- relevant WHS/OHS legislated and electrical regulations and legislations requirements
- relevant workplace documentation and work activities records, including:
 - methods for recording and maintaining work records
 - regulatory work record requirements
 - types of work activity maintenance records
- relevant workplace policies and procedures
- risk mitigation processes include safe work method statements
- safe and correct use of electrotechnology apparatus
- safety features of relevant electrotechnology apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0043 Solve problems in direct current circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to determine correct operation of single source direct current (d.c.) series, parallel and series-parallel circuits and provide solutions to various electrotechnology work functions.

It includes working safely; using voltage, current and resistance measuring devices; and providing solutions to measurement and calculation problems derived from single and multiple path circuits.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V d.c.

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify d.c. electrical circuits

- 1.1** Nature of the circuit problem is obtained from relevant documentation, electrical drawings or personnel to determine the scope of work to be undertaken
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
- 1.3** Tools, equipment and circuit measuring devices required for the electrical work are obtained and checked for correct operation and safety in accordance with workplace procedures
- 1.4** Electrical apparatus is visually inspected, and components and circuits are identified

2 Determine electrical d.c. circuit problem

- 2.1** Electrical hazards are identified, risks are assessed and control measures are implemented
- 2.2** Need to test or measure live electrical work is conducted in accordance with WHS/OHS workplace safety procedures and regulatory requirements
- 2.3** Circuits are checked and isolated in accordance with workplace procedures and regulatory requirements
- 2.4** Expected circuit parameters are calculated from relevant component ratings/specifications
- 2.5** Circuit parameters are measured in accordance with industry standards and checked against expected values
- 2.6** D.c. circuit problems are assessed from measured and calculated values using established methodologies as they apply to circuits
- 2.7** Circuit solutions are determined from measured and calculated values of resistance, voltage, current and power in series, parallel, and series-parallel circuits in accordance with industry standards
- 2.8** Solutions are tested in accordance with workplace procedures and industry standards
- 2.9** Problems are resolved without damage to apparatus, circuits, the surrounding environment or services using

		sustainable energy practices
	2.10	Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
3 Complete work and document problem-solving activities	3.1	WHS/OHS work completion risk control measures and procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Justification for solutions used to resolve circuit problems is documented
	3.4	Work completion is documented, electrical drawings are updated, and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE104A Solve problems in d.c. circuits.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0043 Solve problems in direct current circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- altering an existing circuit to comply with specified operating parameters
- applying Ohm's Law to solve problems in direct current (d.c.) single path circuits
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including identifying risks and applying risk control measures
- calculating resistance of a conductor from factors such as conductor length, cross-sectional area, resistivity and changes in temperature and material
- connecting analogue/digital ammeter into a circuit ensuring the polarities are correct to take current readings
- connecting a series d.c. circuit containing capacitor and resistor to determine the time constant of the circuit
- calculating quantities from given information to determine capacitance, energy and voltage
- calculating one time constant as well as the time taken to fully charge and discharge a given capacitor
- calculating equivalent capacitance of capacitors connected in series and parallel circuits
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- demonstrating graphical relationships of voltage, current and resistance
- calibrating and using measuring device in accordance with manufacturer specifications
- determining the operating parameters of an existing circuit
- developing circuits to comply with a specified function and operating parameters
- identifying and applying electrical industry standard symbols to represent electrical components in circuit diagram
- identifying fixed and variable resistors, including:
 - determining resistance of a colour coded resistor from colour code tables and confirming the value by measurement
 - measuring resistance of variable resistors under varying conditions of light, voltage and/or temperature
 - selecting a resistor for an application
- solving problems in series and series-parallel circuits, including:

- developing, setting up and connecting a single source d.c. series-parallel circuit
- measuring voltage and current
- calculating resistance, voltage, current and power from measured and/or given values of any two of these quantities in a single source series-parallel circuit
- using test equipment to confirm the effect of material length, cross-sectional area and temperature on the resistance of conductive materials
- selecting an appropriate meter in terms of units to be measured, range, loading effect and accuracy for a given application
- using measuring devices to Solve problems in direct current circuits
- using meters for problem solving, including measuring resistance using direct, volt-ammeter and/or bridge methods
- using methodical techniques to solve d.c. circuit problems from measured and calculated values.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- electrical concepts, including:
 - calculations involving quantity of electricity, velocity and speed
 - distribution of electricity from the source to the load via the transmission systems
 - principle of conservation of energy
 - production of electricity, including:
 - renewable and non-renewable energy sources
 - static and current electricity
 - utilisation of electricity by the various loads
- electrical circuit, including:
 - industry standard symbols used to represent components in an electrical circuit diagram
 - multiple and sub-multiple units
 - purpose of each component in the electrical circuit
- Ohm's Law, including:
 - d.c. single path circuit
 - determining voltage, current and resistance in a circuit
 - effects of an open circuit, a closed circuit and a short circuit on a d.c. single path
 - relationship between voltage and current from measured values in a circuit
 - graphical relationships of voltage, current and resistance
 - relationship between voltage, current and resistance
 - voltage and current levels in a d.c. single path circuit
- electrical power, including:
 - effects of power rating of various resistors
 - methods for measuring of electrical power in a d.c. circuit

- power dissipated in circuit from voltage, current and resistance values
- power ratings of electrical devices
- relationship between force, power, work and energy
- effects of electrical current, including:
 - relevant industry standards relating to fundamental principles for protection against the damaging effects of current
 - mechanisms by which metals corrode
 - principles by which electric current can result in the production of:
 - heat
 - magnetic fields
 - a chemical reaction
 - typical uses of electrical current
 - physiological effects of current
- electromotive force (EMF) sources and conversion of electrical energy, including:
 - input, output, efficiency and losses of electrical systems and machines
 - principles of generating an EMF, including:
 - when a mechanical force is applied to a crystal
 - when moving a conductor in a magnetic field
 - by the application of light falling on the surface of photovoltaic (PV) cells
 - from the heating of one junction of a thermocouple
 - principles of producing an electrical current from primary, secondary and fuel cells
- resistors, including:
 - types and applications of fixed and variable resistors used in the electrotechnology industry
 - characteristics of variable resistors used in the electrotechnology industry, including:
 - adjustable resistors: potentiometer and rheostat
 - light dependent resistor (LDR)
 - voltage dependent resistor (VDR)
 - temperature dependent resistor
 - power ratings of a resistor
 - power loss (heat) occurring in a conductor
 - resistor colour code tables
- series, parallel, and series-parallel circuits, including:
 - applications where these circuits are used in the electrotechnology industry
 - characteristics of series, parallel, and series-parallel circuits, including:
 - connection of loads
 - current path
 - voltage drops
 - power dissipation
 - effects of an open circuit

- diagrams of single source d.c. series, parallel, and series-parallel circuits
- identification of the components of series, parallel, and series-parallel circuits, including power supply, loads, connecting leads and switch
- relationship between voltage drops and resistance in a simple voltage divider network
- techniques for determining voltage, current, resistances or power dissipated from measured or given values (of any two of these quantities)
- relationship between branch currents and resistances in a two-branch parallel and series-parallel current divider network
- factors affecting the resistance of a conductor, including:
 - conductor length
 - cross-sectional area
 - resistivity
 - changes in temperature and material
 - effect the change in cross-sectional area, length and type of material has on the resistance of a conductor
 - effects of resistance on the current-carrying capacity and voltage drop in cables
 - effects of temperature change on the resistance of various conducting materials
- effects of measuring devices in a circuit, including:
 - advantages and disadvantages of each voltage indicator tester
 - calibration and use of the measuring device
 - methods for connecting an analogue/digital voltmeter into a circuit ensuring the polarities are correct and taking various voltage readings
 - correct techniques to read the scale of an analogue meters and how to reduce the 'parallax' error
 - hazards associated with the use of measuring devices, including polarity
 - hazards involved in using electrical instruments and the safety control measures that should be taken
 - instruments used in the field to measure voltage, current, resistance and insulation resistance and the typical circumstances in which they are used
 - methods for using insulation resistance measuring devices to relevant industry standards
 - loading effect of various voltmeters when measuring voltage across various loads
 - methods for measuring resistance using direct, volt-ammeter and bridge methods
 - non-contact voltage indicator types and use
 - operating characteristics of analogue and digital meters
 - connecting an analogue/digital voltmeter into a circuit ensuring the polarities are correct and taking various voltage readings
 - operation of various voltage indicator testers
 - purpose and characteristics of a voltmeter
 - purpose of an ammeter and the correct connection (series) of an ammeter into a circuit
 - reasons the internal resistance of an ammeter must be extremely low and the dangers and consequences of connecting an ammeter in parallel and/or wrong polarity

- methods for selecting an appropriate meter in terms of units to be measured, range, loading effect and accuracy for a given application
- types of voltage indicator testers, including light-emitting diode (LED), neon, solenoid, volt-stick and series tester and the purpose of each voltage indicator tester
- methods for using voltage indicator testers to detect the presence of various voltage levels
- capacitors and capacitance, including:
 - construction of a standard capacitor
 - different types of dielectric material and each dielectric's relative permittivity
 - types of capacitors commonly used in the electrotechnology industry
 - industry standard symbol of various types of capacitors, including standard, variable, trimmer and polarised
 - terms and units for capacitance, electric charge and energy
 - factors affecting capacitance
 - behaviour of a series d.c. circuit containing resistance and capacitance components. - charge and discharge curves
 - arrangement of a series d.c. circuit containing capacitance and resistor to determine the time constant of the circuit
- capacitors in series and parallel, including:
 - application of capacitors in the electrotechnology industry
 - common faults in capacitors
 - arrangement of capacitors in series and/or parallel configurations to achieve various capacitance values
 - equivalent capacitance of capacitors connected in series and parallel
 - effects of capacitors connected in parallel by calculating their equivalent capacitance
 - effects on the total capacitance of capacitors connected in series by calculating their equivalent capacitance
 - hazards involved in working with capacitance effects and the safety control measures that should be taken, including safe handling and the correct methods of discharging various size capacitors, dangers of a charged capacitor and the consequences of discharging a capacitor through a person
 - testing of capacitors to determine serviceability.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment (including single source series, parallel and series-parallel d.c. circuits) and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0044 Solve problems in multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve problems in multiple path circuits.

It includes working safely; applying problem-solving procedures, including the use of voltage, current and resistance measuring devices; and providing solutions derived from measurements and calculations to predictable problems in multiple path circuits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work on multiple path circuits

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Scope of work to be undertaken is determined from relevant documentation, electrical drawings or relevant person/s
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) workplace procedures for a given work

- area are identified and applied
- 1.3 Electrical hazards are identified, risks are assessed, and control measures are implemented
 - 1.4 Advice is sought from the relevant person/s to ensure the work is coordinated effectively with others
 - 1.5 Materials required for work are identified and accessed in accordance with workplace procedures
 - 1.6 Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety
- 2 Solve multiple path circuit problems**
- 2.1 The need to test or measure live is determined in accordance with WHS/OHS requirements and when necessary conducted in accordance with workplace procedures
 - 2.2 Circuits are checked as isolated in accordance with workplace procedures and regulatory requirements
 - 2.3 Expected circuit parameters are calculated from relevant component ratings/specifications
 - 2.4 Circuit parameters are measured in accordance with industry standards and checked against expected values
 - 2.5 Circuit problems are assessed using measured and calculated values as they apply to multiple path circuits
 - 2.6 Circuit solutions are determined from measured and calculated values of resistance, voltage, current and power in extra-low voltage (ELV) multiple path circuits
 - 2.7 Solutions are tested in accordance with workplace procedures and industry standards
 - 2.8 Problems are resolved without damage to equipment, circuits, the surrounding environment or services using sustainable energy practices
 - 2.9 Unplanned situations are responded to in accordance with workplace procedures, in a manner that minimises risk to personnel and equipment
- 3 Complete work and document problem-solving activities**
- 3.1 WHS/OHS work completion risk control measures and procedures are followed

- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to resolve circuit problems is documented
- 3.4 Work completion is documented, electrical drawings are updated, and relevant personnel are notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

- Installation, fault finding, maintenance or development work functions in multiple path circuits must be demonstrated in one of the following disciplines:
- computers
 - data communications
 - electrical
 - electronics
 - fire protection
 - instrumentation
 - refrigeration and air conditioning
 - renewable and sustainable energy systems
 - security technology

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0044 Solve problems in multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
 - identifying and assessing hazards and risks
 - implementing control measures
 - safely measuring the parameters for the whole or any part of a d.c. circuit
- working safely with electric circuits in the electrotechnology sector, including:
 - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
 - applying protections against the physiological effects of electrical currents
- calculating values of voltage, current and resistance in single source series/parallel circuits given any two of these quantities
- calculating power in single source series/parallel circuits from known values of voltage, current and/or resistance
- connecting a parallel circuit: power supply, protection device, switch and loads
- connecting a series/parallel circuit: power supply, protection device, switch and loads
- measuring values of voltage and current in single source ELV series/parallel circuits
- measuring values of resistance, including insulation resistance and continuity/no continuity
- measuring values of capacitance
- testing capacitors to determine serviceability
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- using methodical techniques to solve circuit problems from measured and calculated values
- ensuring compliance with relevant Australian Standards and legislation
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- factors affecting resistance, including:
 - four factors that affect the resistance of a conductor (type of material, length, cross-sectional area and temperature)
 - affect the change in the type of material (resistivity) has on the resistance of a conductor
 - affect the change in 'length' has on the resistance of a conductor
 - affect the change in 'cross-sectional area' has on the resistance of a conductor
 - effects of temperature change on the resistance of various conducting materials
 - effects of resistance on the current-carrying capacity and voltage drop in cables
 - techniques for calculation of the resistance of a conductor from factors such as conductor length, cross-sectional area, resistivity and changes in temperature
 - using digital and analogue ohmmeter to measure the change in resistance of different types of conductive materials (copper, aluminium, nichrome and tungsten) when those materials undergo a change in type of material length, cross-sectional area and temperature
- series/parallel circuits including:
 - schematic diagram of a single source d.c. series/parallel circuit
 - identification of the major components of a series/parallel circuit (power supply, protection device, switch and loads)
 - applications where series/parallel circuits are used in the electrotechnology industry
 - characteristics of a series/parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a series/parallel circuit)
 - relationship between voltages, currents and resistances in a bridge network
 - calculation of the total:
 - resistance of a series/parallel circuit
 - current of a series/parallel circuit
 - voltage and the individual voltage drops of a series/parallel circuit
 - techniques for setting up and connecting a single source d.c. series/parallel circuit
 - resistance, voltage and current measurements in a single source d.c. series/parallel circuit
 - the voltage, current, resistances or power dissipated from measured values of any two of these quantities
- parallel circuits including:
 - schematic diagram of a single source d.c. parallel circuit
 - identification of the major components of a parallel circuit (power supply, protection device, switch and loads)
 - applications where parallel circuits are used in the electrotechnology industry
 - characteristics of a parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a parallel circuit)
 - relationship between currents entering a junction and currents leaving a junction
 - relationship between branch currents and resistances in a two-branch current divider

network

- methods to calculate total:
 - resistance of a parallel circuit
 - current of a parallel circuit
 - voltage and the individual voltage drops of a parallel circuit
- techniques for setting up and connecting a single source d.c. parallel circuit
- resistance, voltage and current measurements in a single source parallel circuit
- voltage, current, resistance or power dissipated from measured values of any of these quantities
- output current and voltage levels of connecting cells in parallel
- meters in a circuit, including:
 - types, operating characteristics and purpose of instruments/meters used to measure voltage, current, resistance and insulation resistance
 - advantages and disadvantages of different instruments/meters commonly used in the field
 - hazards involved in using electrical instruments/meters and relevant safety control measures
 - techniques to correctly connect and accurately read instruments/meters used in the field and common errors that may occur when connecting and reading meters
 - consequences of incorrect connection of instruments/meters into a circuit
 - techniques for calculation of resistance values using voltmeter and ammeter reading
- resistance measurement, including:
 - types, operating characteristics, purpose and storage of instruments to measure resistance (including insulation resistance)
 - functions of various analogue and digital insulation resistance testers
 - reasons why the supply must be isolated prior to using the insulation resistance tester
 - where and why the continuity test and insulation resistance test would be used in an electrical installation
 - the voltage ranges of an insulation resistance tester and where each range may be used
 - AS/NZS 3000 requirements for resistance measurement/testing
 - purpose and method to carry out a calibration check on an resistance tester
 - techniques for measurement of:
 - low values of resistance using a resistance tester continuity functions
 - high values of resistance using a resistance tester insulation resistance function
 - resistance using volt-ammeter methods
- capacitors and capacitance including:
 - techniques for identification of various types of capacitors commonly used in the electrotechnology industry
 - circuit symbol of various types of capacitors: standard, variable, trimmer and polarised
 - terms and units for capacitance and electric charge
 - behaviour of a series d.c. circuit containing resistance and capacitance components. - charge and discharge curves

- techniques for calculation of quantities from given information: capacitance, charge and voltage
- techniques for calculation one time constant as well as the time taken to fully charge and discharge a given capacitor
- techniques for connection of a series d.c. circuit containing capacitance and resistor to determine the time constant of the circuit
- capacitors in series and parallel, including:
 - hazards involved in working with capacitance effects and the safety control measures that should be taken
 - safe handling and the correct methods of discharging various size capacitors
 - dangers of a charged capacitor and the consequences of discharging a capacitor through a person
 - effects of capacitors connected in parallel by calculating their equivalent capacitance
 - effects on the total capacitance of capacitors connected in series by calculating their equivalent capacitance
 - techniques for connecting capacitors in series and/or parallel configurations to achieve various capacitance values
 - common faults in capacitors
 - techniques for testing of capacitors to determine serviceability
 - application of capacitors in the electrotechnology industry.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0046 Solve problems in single path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve problems in single path circuits.

It includes working safely; applying problem-solving procedures, including the use of basic voltage, current and resistance measuring devices; and providing known solutions to predictable circuit problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work on single path electrical circuits

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Scope of work to be undertaken is determined from relevant documentation, electrical drawings or relevant person/s
1.2	Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied

	1.3	Electrical hazards are identified, risks are assessed, and control measures are implemented
	1.4	Advice is sought from the relevant person/s to ensure the work is coordinated effectively with others
	1.5	Materials required for work are identified and accessed in accordance with workplace procedures
	1.6	Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety
2 Solve problems in single path electrical circuits	2.1	The need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and, when necessary, conducted in accordance with workplace procedures
	2.2	Circuits are checked as isolated in accordance with workplace procedures and regulatory requirements
	2.3	Expected circuit parameters are calculated from relevant component ratings/specifications
	2.4	Circuit parameters are measured in accordance with industry standards and checked against expected values
	2.5	Circuit problems are assessed using measured and calculated values as they apply to single path, single source circuits
	2.6	Circuit solutions are determined from measured and calculated values of resistance, voltage, current, and power in single path circuits
	2.7	Solutions are tested in accordance with workplace procedures and industry standards
	2.8	Problems are resolved without damage to equipment, circuits, the surrounding environment or services using sustainable energy practices
	2.9	Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
3 Complete work and document problem solving activities	3.1	WHS/OHS work completion risk control measures and procedures are followed

- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to solve circuit problems is documented
- 3.4 Work completion is documented, and relevant personnel are notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

- Installation, fault finding, maintenance or development work functions of single source series circuits containing more than one load must be demonstrated in one of the following disciplines:
- computers
 - data communications
 - electrical
 - electronics
 - fire protection
 - instrumentation
 - refrigeration and air conditioning
 - renewable and sustainable energy systems
 - security technology

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0046 Solve problems in single path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
 - identifying and assessing hazards and risks
 - implementing control measures
 - safely measuring the parameters for the whole or any part of a d.c. circuit
- working safely with electric circuits in the electrotechnology sector, including:
 - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
 - applying protections against the physiological effects of electrical currents
- determining the operating parameters of an existing circuit
- calculating values of voltage, current and resistance in single source series circuits given any two of these quantities
- calculating power in single source series circuits from known values of voltage and current and/or resistance
- connecting a series circuit: power supply, protection device, switch and load
- measuring values of voltage and current in single source series circuits
- measuring values of resistance
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- identifying loss of supply
- using methodical techniques to solve circuit problems from measure and calculated values
- ensuring compliance with relevant Australian Standards and legislation
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include

knowledge of:

- electrical concepts, including:
 - static and current electricity
 - production of electricity by renewable and non-renewable energy sources
 - transportation of electricity from the source to the load via the transmission and distribution systems
 - utilisation of electricity by the various loads
 - basic calculations involving quantity of electricity
- electrical circuits, including:
 - symbols used to represent an electrical energy source, a load, a switch and a circuit protection device in a circuit diagram
 - purpose of each component in the circuit
 - effects of an open circuit, a closed circuit and a short circuit
 - multiple and sub-multiple units
- Ohm's Law including:
 - direct current (d.c.) single path circuit
 - voltage and currents levels in a basic d.c. single path circuit
 - effects of an:
 - open circuit
 - a closed circuit and a short circuit on a basic d.c. single path
 - relationship between voltage and current from measured values in a simple circuit
 - determining voltage, current and resistance in a circuit given any two of these quantities
 - graphical relationships of voltage, current and resistance
 - relationship between voltage, current and resistance
- electrical power, including:
 - relationship between force, power, work and energy
 - power dissipated in circuit from voltage, current and resistance values
 - power ratings of devices
 - methods for measuring electrical power in a d.c. circuit
 - effects of power rating of various resistors
- effects of electrical current, including:
 - physiological effects of current
 - principles by which an electric current can produce heat, light, motion and a chemical reaction
 - typical uses of the effects of current
 - mechanisms by which metals corrode
 - fundamental principles listed in AS/NZS 3000 for protection against the damaging effects of current
- electromotive force (EMF) sources and conversion of electrical energy, including:
 - input/output (I/O), efficiency and losses of electrical systems and machines

- principles of generating an EMF, including:
 - when a mechanical force is applied to a crystal
 - when moving a conductor in a magnetic field
 - by the application of light falling on the surface of photovoltaic (PV) cells
 - from the heating of one junction of a thermocouple
- principles of producing an electrical current from primary, secondary and fuel cells
- resistors, including:
 - types and applications of fixed and variable resistors used in the electrotechnology industry
 - identification of fixed and variable resistors
 - characteristics of temperature, voltage and light dependent resistors and typical applications of each
 - power ratings of a resistor
 - power loss (heat) occurring in a conductor
 - resistor colour code tables
 - specifying a resistor for a particular application
- series circuits, including:
 - circuit diagram of a single source single path circuit
 - identification of the major components of a series circuit: power supply, protection device, switch and loads
 - applications where series circuits are used in the electrotechnology industry
 - characteristics of a series circuit - connection of loads, current path, voltage drops, power dissipation and effects of an open circuit in a series circuit
 - the voltage, current, resistances or power dissipated from measured or given values of any two of these quantities
 - relationship between voltage drops and resistance in a simple voltage divider network
 - techniques for setting up and connecting a single source single path circuit
 - methods for measurement of resistance, voltage and current values in a single source single path circuit
 - effect of an open circuit on a series connected circuit.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to use drawings, diagrams, cable schedules, industry standards, codes of practice and specifications as they apply to various electrotechnology work functions.

It includes interpreting schematic, wiring and mechanical diagrams, equipment and cable/connection schedules and manuals; and the use and format of compliance standards, codes and job specifications used in the electrotechnology industry. It also includes the use of site and architectural drawings/plans to show the location of services, apparatus, plant and machinery.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to use drawings, diagrams, schedules and manuals

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Hazards are identified, risks are assessed and control measures are implemented

	1.2	Need for drawings, diagrams, schedules or manuals is determined from the nature of work to be undertaken
	1.3	Relevant drawings, diagrams, site plans and cable/connection schedules or manuals required for the work to be undertaken are determined and obtained in accordance with workplace procedures
2 Use drawings, diagrams, schedules and manuals to obtain job information	2.1	Drawings, diagrams and cable/connection schedules are interpreted using drawing layouts, conventions and symbols
	2.2	Dimensions are extracted from drawings and diagrams in accordance with workplace procedures for application to the work to be undertaken
	2.3	Location of equipment is determined from equipment cable/connection schedules and location diagrams
	2.4	Information relating to work to be undertaken is located and interpreted from relevant cable/connection manuals in accordance with workplace procedures
3 Use drawings, diagrams, schedules and manuals to convey information and ideas	3.1	Drawing conventions are applied in neat and legible freehand drawings to convey information and ideas to person/s involved in the work to be undertaken
	3.2	Drawing conventions are used to neatly correct freehand original job drawing to show final 'as-installed' arrangement in accordance with workplace procedures
	3.3	Corrected drawings are forwarded to appropriate person/s in accordance with workplace procedures
4 Comply with industry standards, codes of practice and specifications	4.1	Industry standards and codes of practice that specifically apply to relevant disciplines are obtained in accordance with workplace procedures
	4.2	Format of industry standards and codes of practice that apply to relevant disciplines are reviewed and applied in accordance with workplace procedures
	4.3	Purpose, format and content of job specifications are reviewed and applied

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Using drawings, diagrams, schedules, standards, codes and specifications must include:

- assembly, installation, fault finding, maintenance or development work functions in the electrotechnology industry

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - identifying hazards
 - implementing and monitoring control measures
- dealing with unplanned events in accordance with workplace procedures
- extracting dimensions from drawings and diagrams
- reading and interpreting drawings, diagrams and plans to determine the location of electrical/communication/audio accessories and appliances
- using drawings, diagrams, cable/connection schedules, industry standards, codes of practice and specifications used in electrotechnology work, including:
 - giving correct information in freehand drawings
 - identifying and selecting drawings, diagrams, site plans, cable/connection schedules and manuals relevant to the work to be undertaken
 - interpreting drawings, diagrams, cable/connection schedules and manuals correctly
 - obtaining compliance standards and codes applicable to particular disciplines
 - reviewing and understanding the format of compliance standards and codes that apply to particular disciplines
 - reviewing the format and content of typical job specifications
 - using correct conventions in freehand drawings
- sketching and marking up basic circuit diagrams
- developing switching charts to identify the terminals of various types of switches
- using drawings, diagrams, schedules and manuals to:
 - connect equipment
 - convey information and ideas
 - obtain job information.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- architectural drawings, including:
 - site plans, floor plans detailed drawings and standard drawings
 - architectural floor plans to determine the power and lighting or communications/audio/video layouts required in a domestic installation
 - site plans to locate the service point, consumer mains, communication services, main switchboard, distribution boards and/or builders supplies
 - standard drawing scales to determine the actual lengths represented by dimensions on an architectural drawing
 - Australian standard symbols used on floor plans to show the location of the accessories and appliances as detailed in an electrical schedule
- building construction drawings and diagrams, including:
 - building types: timber frame, brick veneer, double brick and metal frame
 - identification of different types of footings, floors, external walls, roofs and interior walls
 - typical cable routes through buildings, structures and premises
 - sequence of each constructional stage for brick, brick veneer and timber cottages
 - identification of the stages at which the electrical/communications - first and second fixing occurs in the constructional sequence
 - areas of cooperation between electrical/communications and other building trades
- circuit diagrams, including:
 - purpose of circuit diagrams in the electrotechnology industry
 - conventions used in and the features of circuit diagrams
 - common symbols used in circuit diagram
- electrical drawings, including:
 - types of electrical drawings: block, circuit, wiring and ladder diagrams
 - purpose and application of block, circuit, wiring diagrams and ladder diagrams
 - Australian standard symbols used to represent components on electrical diagrams
 - converting a circuit diagram to a wiring diagram
 - identification of cable type, origin and route from a cable schedule
 - developing a cable schedule for a given installation
- purpose, format and content of typical job specifications, including common templates on which job specifications are written
- regulations for undertaking electrical work, including legislative requirements for ensuring electrical or electronic equipment is safe i.e. compliance requirements of electrical installations
- scope of work covered by licensing in the electrotechnology industry (electrical licensing)
 - legislative requirements for ensuring electrical or electronic equipment is safe, including compliance requirements of electrical installations

- relevant WHS/OHS legislated requirements
- relevant workplace policies and procedures include risk mitigation process
- standards philosophy and format, including:
 - performance verses prescriptive requirements
 - purpose of technical standards and their development
 - role of Standards Australia/New Zealand, International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC)
 - how standards are used in compulsory and accreditation compliance schemes
 - arrangement and use of technical standards in relation to electrical and electronic work
 - how to read and apply a standard
 - standards and codes that apply to all types of electrical installations
 - standards mandated under regulation (e.g. Wiring Rules) or by an authority, deemed-to-comply standard and local service requirements (e.g. service rules)
 - codes applicable to electrical safe working practices and some aspects of the Building Code of Australia (BCA)
- wiring diagrams, including:
 - purpose of wiring diagrams in the electrotechnology industry
 - conventions used in and the features of wiring diagrams
 - common symbols used in wiring diagrams.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECO0001 Estimate electrotechnology projects

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to estimate material and labour costs for competitive quotation/tenders for electrotechnology work exceeding \$AUD20,000.

It includes reading and understanding job specifications, adjusting for material take-offs, determining labour and site requirements, costing and documenting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Commercial

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Determine project scope

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
1.2	Hazards are identified, risks are assessed and control measures are implemented

	1.3	Extent of the project is determined from design brief specifications, other relevant documentation and discussions with appropriate person/s
	1.4	Estimated completion date is determined from design brief specifications, other relevant documentation and discussions with appropriate person/s
	1.5	Project activities are planned to meet scheduled timeframes in consultation with relevant person/s
2 Estimate electrotechnology project	2.1	Material take-offs are determined accurately and checked against job specifications
	2.2	Materials, labour and other costs are determined from relevant workplace documentation
	2.3	Sources and availability of materials and human resources required for the electrotechnology project are determined in accordance with workplace procedures
	2.4	Estimates are checked and revised for accuracy in costing against job specifications in consultation with relevant person/s
	2.5	Unplanned events are responded to in accordance with workplace procedures
3 Document and submit quotation	3.1	Project estimates are documented in accordance with workplace procedures
	3.2	Quotation is forwarded to relevant person/s within specified timeframe
	3.3	Quotation documentation is filed in accordance with workplace policies and procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package

Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEC005B Estimate electrotechnology projects.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECO0001 Estimate electrotechnology projects

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- adjusting estimates
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- checking and documenting estimates
- creating, documenting, forwarding and filing quotations
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- documenting and submitting quotations
- estimating completion dates
- estimating electrotechnology project material and labour costs
- estimating electrotechnology projects for a competitive quotation/tender for which the value must exceed \$AUD20,000
- identifying risk control measures
- planning extent of projects
- sourcing materials and human resources
- working within timeframes.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- contingency
- costing
- design brief and specifications
- documents used in estimating and costing margins
- material take-off methods, including a list of materials with quantities and types of material
- money labour rates method of costing
- life cycle costing analysis

- project estimates, including quotations and adjustments
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- resources to be quantified and costed
- resource (labour, plant, equipment and materials).

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECO0002 Maintain documentation

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain and prepare documentation required to record work activities, purchases and expenses obligations.

It includes planning and maintaining documentation typically required in an electrotechnology workplace information system.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Commercial

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to maintain documentation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Documentation requirements and record management methods are identified, obtained and applied in accordance with workplace procedures
- 1.2** Advice is sought from supervisor, as required, to ensure work activity is correctly documented and coordinated with other person/s

	1.3	Forms required to document work activity are obtained in accordance with workplace procedures
	1.4	Work health and safety (WHS)/occupational health and safety (OHS), risk assessment and control measures are documented in accordance with workplace procedures
2 Maintain documents	2.1	Work activities are documented, at the appropriate time and in accordance with workplace procedures
	2.2	Documents are checked for accuracy, clarity and anomalies corrected
	2.3	Appropriate information technology is used to maintain workplace documentation
	2.4	Signatures are obtained by relevant person/s, as required
	2.5	Copies of required documents are forwarded to appropriate person/s in accordance with workplace procedures
	2.6	Unplanned events are referred to supervisor for direction in accordance with workplace procedures.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit must be demonstrated by:

- maintaining documentation in an electrotechnology organisation information system

Unit Mapping Information

This unit replaces and is equivalent to UEENEEC001B Maintain documentation.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECO0002 Maintain documentation

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- dealing with unplanned events in accordance with workplace documentation
- recording and maintaining workplace records using appropriate technology in accordance with workplace information methods
- following workplace record management procedures
- maintaining documentation
- planning documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- computers and applications, including:
 - entering information
 - printing
 - saving
 - selecting application
 - starting up
- relevant risk mitigation processes, including risk control measures
- relevant WHS/OHS legislated work records requirements
- relevant workplace communication methods, including:
 - communicating with customers
 - communicating with personnel
 - communicating with suppliers
 - oral and written communication
- relevant workplace documentation and work activities records, including:

- methods for recording and maintaining work records
- purpose and extent of work activities records
- regulatory work record requirements
- types of records for maintaining work activities
- relevant workplace record management policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECO0016 Receive and store materials and equipment for electrotechnology work

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to receive and store materials and equipment for electrotechnology work.

It includes receiving materials and equipment, checking consignment notes, storing materials and equipment, and completing the necessary documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Commercial

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Receive materials and equipment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
- 1.2 Hazards are identified, risks are assessed and control measures are implemented

	1.3	Documentation for material and equipment deliveries is read and content is understood
	1.4	Deliveries are inspected for damage and checked against consignment documentation before receipt
	1.5	Discrepancies in deliveries are notified to work supervisor and relevant person/s in accordance with workplace procedures
	1.6	Materials and equipment are handled in accordance with WHS/OHS risk control work measures and workplace procedures
2		Store materials and equipment
	2.1	WHS/OHS risk control work measures and workplace procedures are followed
	2.2	Material and equipment are stored to prevent damage or loss in accordance with workplace procedures
	2.3	Security of the stored materials and equipment is maintained in accordance with workplace procedures
	2.4	Material and equipment documentation is forwarded to relevant person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEC008B Receive and store materials and equipment for electrotechnology work.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECO0016 Receive and store materials and equipment for electrotechnology work

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- checking deliveries and dealing with and reporting discrepancies
- determining content and time of pending deliveries from relevant documentation
- implementing relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including risk control measures
- reading and forwarding documentation
- receiving and storing materials and equipment
- storing and securing materials and equipment to prevent damage or loss.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- enterprise communication methods, including:
 - communicating with personnel, including oral communications and written procedures and work instructions
 - communicating with suppliers
 - communicating with customers
- work activities records, including:
 - purpose and extent of maintaining work activities records in an enterprise
 - types of records for maintaining work activities in an enterprise
 - methods for recording and maintaining work records
 - work records required by regulation requirements
- stock control methods, including:
 - enterprise purchasing policy
 - stock database
 - purchase and sales entry mechanisms
 - reordering methods

- using basic computers and applications, including:
 - starting up
 - selecting application
 - entering information
 - saving
 - printing
- relevant job safety assessments or risk mitigation processes, including risk control measures
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, including consignment notes
- relevant workplace policies and procedures
- stock loss prevention
- storage, handling and security of materials and equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECO0017 Source and purchase material/parts for installation or service jobs

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to source and purchase/order materials/parts for installation or service jobs.

It includes determining job specifications, using manufacturer catalogues, making purchasing enquiries, selecting appropriate materials/parts and completing relevant purchasing documentation.

In this unit, the value of materials for small installation jobs is limited to \$AUD20,000.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Commercial

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Determine relevant materials/parts to purchase

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) procedures for a given work area are identified, obtained and applied in accordance with

- workplace procedures
- 1.2 WHS/OHS risk control measures and workplace procedures are followed
- 1.3 Scope of installation or service work is determined from job specification drawings and/or results of service calls
- 1.4 Materials/parts required for work are determined from job specifications or service calls
- 1.5 Materials/parts required are documented in accordance with workplace procedures
- 2 **Procure materials/parts**
 - 2.1 Source of materials/parts are determined based on availability and price in accordance with workplace procurement procedures
 - 2.2 Approval to purchase alternative materials/parts is sought from supervisor in accordance with workplace procurement procedures
 - 2.3 Prices for the supply of materials/parts, particularly non-standard high-cost items, is sought in accordance with workplace procurement procedures
 - 2.4 Approval to purchase materials/parts is obtained in writing from the customer or relevant person/s in accordance with workplace procurement procedures
 - 2.5 Purchases are initiated based on price and availability of materials/parts within the required timeframe and in accordance with workplace procurement procedures
 - 2.6 Appropriate information technology is used to source and purchase materials/parts
- 3 **Document materials/parts purchases**
 - 3.1 Materials/parts purchased are allocated against the appropriate jobs
 - 3.2 Materials/parts purchases are documented in accordance with workplace procurement procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Sourcing and purchasing materials/parts must include at least one of the following electrotechnology disciplines:

- automation technologies
- computers
- data communications
- electrical
- electrical machines
- electronics
- fire protection
- instrumentation
- refrigeration and air conditioning
- renewable/sustainable energy
- security technology
- discounts
- goods and service tax (GST)
- delivery costs
- limited to \$AU20,000

Materials or parts purchased price documentation must include:

Purchase value of electrotechnology installation or service materials for small installation jobs is:

Unit Mapping Information

This unit replaces and is equivalent to UEENEEC002B Source and purchase material/parts for installation or service jobs.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECO0017 Source and purchase material/parts for installation or service jobs

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying at least two different methods to source materials
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including risk control measures
- dealing with unplanned events in accordance with workplace procurement procedures
- determining material and part availability and arranging supply
- determining relevant materials/parts to purchase
- determining scope of work and materials/parts procurement requirements from job specifications
- documenting materials/parts purchases
- obtaining approval to purchase in accordance with workplace procurement procedures
- sourcing, obtaining quotes and purchasing appropriate materials/parts in accordance with workplace procurement procedures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- computers and applications, including:
 - entering information
 - printing
 - saving
 - selecting application
 - starting up
- job or project specifications
- relevant part and material manufacturer specifications
- relevant risk mitigation processes including risk control measures
- relevant WHS/OHS legislated requirements

- relevant workplace documentation, including:
 - methods for recording and maintaining work records
 - purpose and extent of work activities records
 - regulatory work record requirements
 - types of records for maintaining work activities
- relevant workplace policies and procedures, including procurement procedures, including:
 - common or preferred suppliers
 - delegated authority to purchase
 - procurement approvals process and procedures
 - purchasing systems
- sources or suppliers for obtaining materials/parts
- workplace communication methods, including:
 - communicating with customers
 - communicating with personnel
 - communicating with suppliers
 - oral and written communication.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEECS0033 Use engineering applications software on personal computers

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to use computer application software relevant to engineering support work functions.

It includes using computer engineering application software, menus and tools, entering and retrieving information, transferring and printing files and shutting down computer applications.

This unit applies to personnel using computer application software relevant to a workplace. Typically, this will apply to individuals working under supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Computer Systems

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to use computer application software

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for an engineering work area are identified, obtained and

	applied
	1.2 WHS/OHS risk control measures and procedures in relation to computer and keyboard use are followed in accordance with workplace procedures
	1.3 Application software and information/instructions required for use are obtained
	1.4 On-screen instructions in relation to any anomaly are followed in accordance with workplace procedures
	1.5 Help menu is used to resolve any common start-up, access issues or anomalies
2 Use engineering software application	2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2 Techniques specific to software packages are used to produce relevant files and engineering information
	2.3 Checks are made to ensure accuracy of information produced
3 Output information from software application	3.1 Completed files are stored appropriately in accordance with workplace policies and procedures
	3.2 Files are printed and stored electronically as formal records and/or forwarded to relevant personnel
4 Shut down computer	4.1 Files are named, arranged, saved and backed up in accordance with workplace policies and procedures
	4.2 Computer shutdown procedures are followed in accordance with workplace procedures and computer powered off

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package

Companion Volume Implementation Guide.

Unit demonstration must include at least two of the following types of engineering applications:

- office applications
- computer-aided design (CAD)
- engineering data analysis software
- engineering modelling
- project management
- network simulator
- protocol analyser

Unit Mapping Information

This unit replaces and is equivalent to UEENEED104A Use engineering applications software on personal computers.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECS0033 Use engineering applications software on personal computers

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including risk control measures
- using online 'Help' function to resolve common problems
- following application instructions to input and output information
- outputting information to relevant devices
- preparing to use computer applications
- reading and applying software instructions
- saving, storing information and backing up files
- saving, storing, outputting and forwarding information electronically
- shutting down computer
- transferring information between software applications
- using engineering application software.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- software operating system
- relevant engineering computer software applications, including:
 - computer-aided design (CAD)
 - engineering data analysis software
 - engineering modelling
 - project management
 - network simulator
 - protocol analyser
- relevant job safety assessments or risk mitigation processes, including risk control measures

- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEDV0005 Install and maintain cabling for multiple access to telecommunication services

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Errors that don't impact unit outcomes in the Range of Conditions, Performance and Knowledge Evidence were corrected.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install and maintain telecommunications cabling in buildings and premises.

It includes working to relevant regulations, legislation, codes of practice and industry standards and to Australian Communications and Media Authority's (ACMA) Telecommunications Cabling Provider Rules; installing multiple telecommunication lines for multiple access to telecommunication services; terminating at telecommunication outlets, termination modules and distributors; testing for compliance and completing cabling documentation.

This unit applies to customer cabling terminated on distributors and to the installation, maintenance and modification of indoor, external, underground cabling and customer cabling and may be used to connect devices for a range of applications, including telecommunications phones, data (video and multimedia) and security (alarms and fire protection).

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the UEE Electrotechnology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

AND

UEECD0043 Solve problems in direct current circuits

OR

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Data and Voice

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install and maintain cabling

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
- 1.2** Hazards are identified, risks are assessed and control measures and workplace procedures are implemented
- 1.3** Nature and location of the work is determined from documentation or relevant person/s to determine scope of work to be undertaken
- 1.4** Cable routes are planned within the constraints of the building structure and in accordance with relevant regulations, legislation, codes of practice and industry standards
- 1.5** Earthing requirements are determined in accordance with existing earthing arrangements, where applicable, and cable system, earth upper and lower resistance limitations
- 1.6** Advice is sought from relevant person/s to ensure work is coordinated effectively with others
- 1.7** Materials required for the work are obtained in accordance with workplace procedures
- 1.8** Tools, equipment and testing devices required for the

2 Install and maintain cabling

- work are obtained and checked for correct operation and safety in accordance with workplace procedures
- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
 - 2.2** Installed support structure is checked for compliance to ensure cable will not be exposed to damage during installation and general operation
 - 2.3** Catenary supports are secured to building structure and tensioned, as required, to ensure cable weight can be carried in operating conditions, with interference and safety segregation maintained in accordance with relevant regulations, legislation, codes and standards
 - 2.4** Protective earthing of metal work is installed in accordance with job requirements and industry standards
 - 2.5** Cables/wires are installed in accordance with manufacturer application, tension and bending stress requirement specifications
 - 2.6** Sufficient cable excess is allowed at cable ends to facilitate termination in accordance with workplace procedures
 - 2.7** Cable ends terminating at a telecommunication outlet are labelled in accordance with industry standards
 - 2.8** Cable is placed and secured to maintain safety and interference segregation in accordance with legislative and industry standards
 - 2.9** Cable ties are tightened correctly and safely in accordance with workplace procedures and industry standards
 - 2.10** Customer cabling is installed in accordance with relevant regulations, codes of practice and industry standards
 - 2.11** Surge suppression devices are fitted to all cable pairs as required with the devices protectively earthed in accordance with relevant regulations, codes of practice and industry standards
 - 2.12** Telecommunications reference conductor (TRC)/communications earth system (CES)/protective earth (PE) insulation is protected against damage and TRC/CES and PE are segregated in accordance with

- relevant regulations, codes of practice and industry standards
- 2.13** Cabling is installed without waste of materials and energy or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 2.14** Regular quality checks are conducted in accordance with workplace procedures to ensure cabling complies with requirements
- 3 Terminate, inspect and test cables and earth wires**
- 3.1** WHS/OHS risk control work measures and workplace procedures for carrying out work are followed
- 3.2** Cable sheath is removed to allow for correct termination length and without damage to underlying conductors and their insulation
- 3.3** Terminating modules are installed in accordance with manufacturer specifications and cable pairs neatly and sequentially fanned for termination
- 3.4** Conductors are terminated in accordance with recommended colour code sequence and using relevant termination tools in accordance with manufacturer guidelines and operating instructions
- 3.5** Cable shields are earthed, as required, in accordance with manufacturer specifications, relevant regulations, codes of practice and industry standards
- 3.6** Visual inspection is undertaken prior to end-to-end testing of wire and pair termination integrity to confirm termination colour code sequence has been followed
- 3.7** Cable pairs are tested and clearly labelled to provide accurate identification in accordance with job requirements and workplace procedures
- 3.8** TRC/CES/PE are terminated with connectors in accordance with manufacturer specifications, relevant industry codes of practice and industry standards
- 3.9** TRC/CES/PE wire continuity is maintained in accordance with workplace procedures and interface requirements with electrical systems are followed
- 3.10** TRC/CES/PE installation is tested for continuity insulation resistance and conductive resistance in

accordance with relevant industry standards

- 3.11 Earthing system is labelled in accordance with job requirements and workplace procedures
- 3.12 New work is tested both in isolation and when integrated with existing systems, and compatibility of alterations with existing systems is confirmed
- 3.13 Cabling is terminated without waste of materials and energy or damage to apparatus, the surrounding environment or services
- 3.14 Regular quality checks are conducted and any defects rectified to ensure cabling complies with requirements

4 Complete cabling work records and reporting

- 4.1 WHS/OHS risk control measures and procedures for work completion are followed
- 4.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 4.3 Record sheets, plans of cable location type and infrastructure are accurately created or updated and stored in accordance with customer requirements and workplace procedures
- 4.4 Cable pair record books are created or updated to provide an accurate record of pair locations, inter-connections and usage in accordance with relevant regulations, codes of practice and industry standards
- 4.5 Telecommunications cabling advice (TCA 1) is documented and reported in accordance with requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Cable laying and connecting to larger commercial and industry installations must include:

Terminating systems at both distributor and outlet locations must include:

- multi-pair cables
- multi-story buildings
- termination modules and distributors
- two jumperable distributors with one having a capacity of 100 pair or greater
- a cable in excess of 20 pair and a 4 pair

Unit Mapping Information

This unit replaces and is equivalent to UEENEEF102A Install and maintain cabling for multiple access to telecommunication services.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEDV0005 Install and maintain cabling for multiple access to telecommunication services

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Errors that don't impact unit outcomes in the Range of Conditions, Performance and Knowledge Evidence were corrected.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - applying safe working practices
 - using risk control measures
- accessing and interpreting telecommunication systems diagrams
- planning cable route within building constraints
- checking tools, equipment and testing devices for correct operation and safety
- laying and connecting cables for multiple access to telecommunication services, including:
 - terminating cabling at both distributor and outlet locations with one cable being greater than 20prs, one cable of 20pr or less and one 4pr cable installing and terminating two jumperable distributors with a capacity of 100 pair or greater
 - allowing excess cable to terminate
 - labelling outlet ends in accordance with industry standards
 - securing cables in accordance with industry standards
 - reading and interpreting drawings related to cable layouts, outlet location, cable coding system, identifiers and distributor locations
 - installing and termination a network termination device (NTD)
- determining earthing requirements and earthing conductors within resistance limitations
- segregating and protecting telecommunications reference conductors (TRC)/communications earth systems (CES)/protective earth (PE) wires against damage
- installing surge suppression devices
- completing documentation in accordance with industry standards and telecommunications carrier requirements

- terminating and testing cables
- commissioning a telecommunications cabling system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- customer interfaces, devices and system distribution
- installation and termination requirements, including:
 - Australian Communications and Media Authority (ACMA) regulations and requirements
 - technical standards
 - relevant manufacturer specifications
 - compliance with current Australian Standards, including AS/CA S009 Installation requirements for customer cabling (Wiring Rules)
- Cabling Provider Rules, including:
 - cabling registrars, auditors and inspectors
 - mandatory and voluntary requirements for cabling work
 - registration
- general installation requirements, including:
 - Cabling Provider Rules requirements
 - earth potential rise
 - catenary cabling systems
 - optical fibre and coaxial cabling systems
 - conduits
- cable distribution devices, including:
 - cable distribution devices
 - clearances
 - general requirement
- network boundaries, including:
 - terminations
 - hazards
 - regulations
- indoor cabling, including:
 - general requirements for indoor cabling
 - required minimum clearances
 - damp situations
 - cables in lift and hoist shafts
- underground cabling, including:
 - requirements for underground cabling

- minimum depth cover
- protection of underground cabling
- segregation from other services
- aerial cabling, including:
 - requirements for aerial cabling
 - minimum clearances
 - segregation requirements
- earthing protection, including:
 - earthing requirements
 - function of earthing
 - TRC/CES/PE purposes
 - TRC/CES earthing installation tests
 - earthing systems
 - earthing of equipment
 - equipotential bonding
- surge suppression and system purpose, types and operation
- miscellaneous regulations, including:
 - cabling in heritage buildings
 - cabling in public places
 - cabling in hazardous areas
- cable identification, including:
 - plans and drawing
 - labelling
 - documentation
- telecommunication cable types including:
 - construction
 - transmission characteristics
 - applications
- cable installation, including:
 - hazards
 - cable damage prevention
 - cable dispensers
 - cable enclosures
 - types
 - fixing
 - regulations
 - distribution boxes and back mounts
- techniques for general cable installation, including:
 - correct cable length for termination
 - cable identification and labelling

- unique label outlet ends of cable match identifier
- cable damage prevention
- fixing of cables to support stems
- maintaining ground clearance and hazardous clearances
- techniques to terminate and test, including:
 - removal of cable sheath
 - install terminating modules
 - terminate conductors
 - termination boundaries
- earthing concepts, including:
 - earthing cable shield
 - testing
 - earth of metallic barriers
 - purpose of earth testing instruments
 - earth potential rise
 - earthing test procedures
 - interpretation of results
- cable shielding and interference, including:
 - electromagnetic interference (EMI)/radio frequency interference (RFI) principles
 - sources
 - reduction techniques
 - earthing cable shields
 - interference segregation
- end-to-end testing, including:
 - pair termination integrity
 - cable pairs labelling
 - surge suppression devices
- hazards, including:
 - electronic components and circuits
 - printed circuit boards
 - physical
 - static discharge
 - chemical.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- two jumperable distributors with a capacity of 100 pair or greater
- a cable in excess of 20 pair, a cable of 20 pair or less and a 4 pair
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEDV0006 Install and modify optical fibre performance data communication cabling

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install and modify optical fibre performance data communication cabling.

It includes working safely, installing optical fibre cabling, terminating at distributors, testing and compliance checks, and completing cabling documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEDV0005 Install and maintain cabling for multiple access to telecommunication services

Competency Field

Data and Voice

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to install and modify optical fibre cabling	1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified, obtained and applied 1.2 Installation and modification of wiring is prepared in consultation with others and sequenced appropriately 1.3 Scope of work is determined from documentation and/or discussions with relevant person/s 1.4 Advice is sought from relevant person/s to ensure work is coordinated effectively with others 1.5 Material required for the installation work is obtained in accordance with workplace procedures and job requirements 1.6 Tools, equipment and testing devices required for the installation work are obtained in accordance with workplace procedures and checked for correct operation and safety 1.7 Preparatory work is checked to ensure no damage has occurred and is in accordance with workplace procedures and relevant industry standards
2 Install and modify optical fibre cables	2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed 2.2 Optical fibres are tested for optical continuity 2.3 Cables are installed and modified with sufficient excess to affect terminations in accordance with manufacturer specifications, relevant industry standards and job requirements 2.4 Methods for dealing with unplanned situations are discussed with relevant person/s for approval and documented in accordance with workplace procedures 2.5 Unplanned situations are dealt with safely and with the approval of relevant person/s 2.6 Quality checks of the installed wiring are conducted in accordance with workplace procedures 2.7 Cable installation and modification is conducted without waste of materials, damage to apparatus, circuits or

		surrounding environment using sustainable energy practices
3 Terminate optical fibre cables	3.1	WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
	3.2	Cable termination work area and optical fibre cables are cleaned and safety measures implemented in accordance with WHS/OHS requirements and workplace procedures
	3.3	Cables are prepared for termination in accordance with manufacturer specifications and relevant industry standards
	3.4	Optical fibre connectors are fitted in accordance with manufacturer specifications and relevant industry standards
	3.5	Relevant methods are used to splice optical fibre cables in accordance with WHS/OHS requirements, manufacturer specifications and relevant industry standards
	3.6	Cable performance tests are conducted and results documented
	3.7	Causes of defects indicated by test results are identified and rectified
	3.8	Unplanned situations are dealt with safely and with the approval of relevant person/s
	3.9	Quality checks of the installed wiring are conducted in accordance with workplace procedures
	3.10	Cable terminations are completed without waste of materials, damage to apparatus, circuits or surrounding environment using sustainable energy practices
4 Document installation and modification and verify optical fibre cabling performance	4.1	WHS/OHS work completion risk control measures and workplace procedures are followed
	4.2	Worksite is cleaned and made safe in accordance with workplace procedures
	4.3	Final checks to the installed cabling are conducted in accordance with job requirements

4.4 Documentation certifying system performance is issued to a relevant person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Installing or modifying cabling must include at least two of the following:

- performance optical fibre cables

Unit Mapping Information

This unit replaces and is equivalent to UEENEEF105A Install and modify optical fibre performance data communication cabling.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEDV0006 Install and modify optical fibre performance data communication cabling

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (WHS/OHS) requirements, including applying risk control measures
- completing documentation
- conducting cable performance tests and documenting results
- dealing with unplanned events
- documenting installation and modification and verifying optical fibre cabling performance
- identifying and rectifying anomalies
- identifying and rectifying defects
- installing and modifying optical fibre cables
- obtaining and checking tools, equipment and testing devices
- preparing and terminating each type of cable in accordance with relevant industry standards
- preparing to install and modify optical fibre cabling
- routing, placing and securing cables in accordance with relevant industry standards
- terminating cable in accordance with manufacturer specifications and relevant industry standards
- terminating optical fibre cables
- testing optical fibres for optical continuity.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- building construction and building codes
- installation and modification
- installation of cables
- optical fibre principles of operation
- optical fibre safety - hazards

- optical fibre safety - laser
- optical theory
- problem-solving techniques
- relevant industry standards
- relevant manufacturer specifications and operating instructions
- relevant job safety assessments or risk mitigation processes
- relevant tools, equipment and testing devices
- relevant WHS/OHS legislated requirements, including risk management principles
- relevant workplace documentation, including administration and management records
- relevant workplace quality, policies and procedures
- support structures and fixings
- sustainable energy principles
- terminating of fibre cables
- testing of optical fibre cables.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to installing and modifying performance data communication optical fibre cabling
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0003 Arrange circuits, control and protection for electrical installations

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to select, arrange and terminate circuits, control and protection devices and systems for electrical installations operating at low voltage (LV).

It includes protection of persons and property, correct functioning, ensuring compatibility with the supply, arranging installation into circuits, selecting and arranging switchgear/control gear and protective devices to meet compliance requirements, and documenting arrangement decisions.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare electrical circuits, control and protection installation

2 Arrange electrical circuits, control and protection

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 The extent and nature of the electrical installation is determined from job specifications

1.2 Hazards are identified, risks are assessed and control measures are implemented

1.3 Load requirements for individual current-using equipment is determined from job specifications and/or consultation with appropriate persons

2.1 Circuits, control and protective devices are arranged to ensure safe and functional operation of the installation and to comply with relevant industry technical standards and job specification requirements

2.2 Earthing is arranged and terminated to comply with the multiple earthed neutral (MEN) system requirements

3 Document electrical installation circuits, control and protection arrangements	2.3 Protective devices are selected to meet the required switching and tripping currents coordination and discrimination for overload and short circuit protection in accordance with relevant industry technical standards 2.4 Residual current devices (RCDs) are selected to meet the required circuit switching and tripping currents, in accordance with relevant industry technical standards 2.5 Switchgear/control gear is selected to meet current and voltage requirements and confirmed suitable for environmental conditions (ingress protection (IP) ratings) and functional requirements 2.6 Switchboards are arranged to accommodate control and protective devices, links, safety services and other distributor equipment in accordance with relevant industry technical standards
	3.1 Evidence is obtained from manufacturer/suppliers that electrical equipment selected complies with safety requirements in accordance with workplace procedures 3.2 Device selection/s rationale and calculations are documented in accordance with workplace procedures 3.3 Electrical installation and specifications for selected items are documented in accordance with workplace procedures and forwarded to appropriate person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Arranging circuits for control and protection must include at least two electrical installations comprising:

- a main switchboard, supplying more than one circuit each for:
- lighting

- socket outlets
- fixed appliances
- one installation must include a circuit supplying a three-phase load
- one installation must include a distribution board separate from the main switchboard.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG063A Arrange circuits, control and protection for electrical installations.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0003 Arrange circuits, control and protection for electrical installations

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- # determining the extent and nature of the installation from job specifications
- # arranging the control and protection for electrical installations with and without safety services
- arranging, testing and terminating a multiple earthed neutral (MEN) earthing system
- # applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices
- # applying safety principles for electrical systems in buildings and premises
- # applying sustainable energy principles and practices
- calculating prospective fault current in accordance with minimum fault levels specified by local supply authority
- calculating earth fault-loop impedance
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining requirements for discrimination and back-up protection for coordination of protection devices
- # determining individual load requirements
- # arranging and terminating circuits, control and protective devices to comply with requirements
- # selecting circuit protective devices and residual current devices (RCDs) that comply with all requirements
- # selecting minimum size-earthing conductors in accordance with relevant industry standards
- selecting circuit breakers to operate when installation is in island mode
- selecting RCDs/residual-current circuit breaker with overcurrent protection (RCBO) to operate when installation is in island mode

- drawing arrangements of 2-pole RCDs, 4-pole RCDs and combination RCDs
- obtaining evidence of compliance for the equipment selected
- # dividing installation into circuits
- selecting equipment for damp situations
- # coordination of protection devices and circuit wiring
- # selecting overcurrent protection devices, circuit breakers and RCDs/RCBOs
- selecting fuses, emergency controls, isolation devices, functional controls and shutdown devices
- selecting a device for fault current limiting protection
- documenting installation arrangement, specification for items selected and reasons for the selections made.

Knowledge Evidence

- AS/NZS 3000 safety principles and deemed to comply requirements including:
 - definition of terms
 - direct contact with live parts
 - indirect contact with live parts
 - thermal effects of current
 - overcurrent
 - earth faults
 - abnormal voltages
 - spread of fire
 - mechanical injury
 - external influences
 - fundamental principles of; installation design; selection and installation of equipment; means of compliance (including alterations, additions and repairs), and verification of compliance
 - methods and devices that comply with industry standards for providing protection against indirect contact
 - requirements for installation design and selection of equipment, including:
 - compliant protection arrangements
 - correct functioning
 - compatibility with supply
 - arrangement of circuits
- circuit and control arrangements, including:
 - reason for dividing electrical installations into circuits
 - factors to be considered in determining the number and type of circuits required for an installation
 - daily and seasonal demand for lighting, power, heating and other loads in a given installation
 - number and types of circuits required for a particular installation

- diagrams/schedules of circuits for given installations
- application and arrangements of separated extra-low voltage (SELV) and protected extra-low voltage (PELV) circuits, including earthing requirements and testing
- application and arrangement of an isolated supply
- hazards and risks in an electrical installation, including:
 - effects on the human body of various levels of alternating current (a.c.) and direct current (d.c.) current and duration of current flow for various current paths
 - risk of ignition of flammable materials due to the thermal effects of current or electric arcs in normal service of an electrical installation
 - risk of injury from mechanical movement of electrically actuated equipment
 - protection against direct contact (basic protection)
 - acceptable methods
 - use of ELV
- protection against indirect contact, including:
 - indirect contact with live parts of an electrical installation may occur
 - components of the ‘automatic disconnection of supply’ method of protection against indirect contact
 - the terms ‘touch voltage’ and ‘touch current’
 - the current path when a short circuit fault to exposed conductive parts of an appliance occurs
 - protection against indirect contact is by the use of Class II equipment and by electrical separation
 - additional protection by use of RCDs
 - protection against indirect contact by use of ELV and electrical separation
 - protection requirements for damp situations
- earthing, including:
 - parts of an earthing system and the purpose of each, including the terms:
 - earthed
 - earthed situation
 - earth electrode
 - equipotential bonding
 - MEN system
 - protective earth-neutral (PEN) conductor
 - main earthing conductor
 - protective earthing (PE) conductor
 - functional earthing
 - MEN link
 - typical arrangement for a MEN system and for a range of installation arrangements of PE conductors
 - typical earthing arrangements for outbuildings
 - alternate earthing systems only when required by local Regulatory Authorities (e.g. TT

- low voltage supply earthing system in dairy sheds in New Zealand)
- requirements for equipotential bonding in a range of installation situations
- protection against overload and short circuit current, including:
 - overload current or fault currents in an electrical installation
 - limitations of the use of overcurrent protection on current limited sources
 - equivalent circuit of an earth fault-loop
 - level of fault current possible at a given point in an installation from the fault-loop impedance and data from the local supply authority
 - requirements for coordination of protection devices for discrimination and back-up protection, and between protective devices and conductors of an installation
 - methods and devices that comply with industry standards for providing protection against the damaging effects of overload and fault current
- devices for automatic disconnection of supply, including:
 - operating principles of thermal/magnet circuit breakers, common types of fuses and RCDs
 - tripping characteristics of various types of circuit breakers
 - time/current curves and fusing characteristics of various types of fuses
 - tripping characteristics of various types of RCDs
 - factors in a fault-loop that will affect the impedance of the circuit
 - maximum impedance of an earth fault-loop to ensure operation of a protection device
- protection against over voltage and under voltage, including:
 - causes of over and under voltage and how this may affect the electrical system
 - methods for protection against over and under voltage
- control of an electrical installation and circuits, including:
 - switch types, current and voltage ratings and ingress protection (IP) rating and where these apply
 - switching requirements for isolation, emergency, mechanical maintenance and functional control
 - control arrangement for complete installations with and without safety services and an alternative supply, including:
 - d.c. polarity requirements
 - correct rating of d.c. switches
- switchboards/distribution boards including:
 - purpose, types and applications
 - physical and circuit arrangements for whole current and current transformer metering
 - physical and circuit arrangements of main switches, circuit protection devices, fault current limiters and metering equipment, and other distributor equipment
 - switchgear types, ratings, characteristics and applications related to alternate supplies
 - compliance requirements, including:
 - location and access
 - arc-fault protection

- identification
- construction suitability
- equipment marking
- wiring
- fire protection
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective (PPE) equipment currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

In addition, evidence of Performance Evidence items of this unit marked with a hash (#) must be gathered in authentic workplace operational conditions (not simulated) before final determination of competence in this unit can be made.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0005 Develop and connect electrical control circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to develop, connect and functionally test electrical power and control circuits that perform specific control functions.

It includes working safely, developing schematic diagrams and converting them to wiring diagrams, selecting and connecting contactors and control devices to perform a specific function. It also includes testing electrical control circuits and completing circuit development activities documentation.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Develop electrical control circuits

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures for a given work area are identified obtained and applied
- 1.2** Control circuit/s requirements are determined from discussions with relevant person/s and documented in accordance with workplace procedures
- 1.3** Agreement for the control circuit/s requirement is sought from appropriate person/s and documented in accordance with workplace procedures
- 1.4** Schematic arrangement of control circuits that complies with agreed requirement is documented in accordance with workplace procedures
- 1.5** Wiring diagram of control circuits is developed from schematic diagram in accordance with workplace

procedures

- 1.6 Materials needed to connect control circuit/s are obtained in accordance with workplace procedures and checked against job requirements
 - 1.7 Tools, equipment and testing devices needed to connect control circuit/s are obtained in accordance with workplace procedures and checked for correct operation and safety
 - 1.8 Preparatory work is checked to ensure no damage has occurred and complies with control circuit/s application requirements
 - 2 Connect and test electrical control circuits**
 - 2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed
 - 2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted within established safety workplace procedures
 - 2.3 Circuits/machines/plant are checked and isolated as required in accordance with WHS/OHS requirements and workplace procedures
 - 2.4 Control circuit component/s are connected to comply with the agreed control requirements
 - 2.5 Control circuit operation is tested for functionality and in accordance with WHS/OHS requirements and workplace safety procedures
 - 2.6 Non-compliant control functions are rectified
 - 2.7 Unplanned situations are dealt with safely and with the approval of an authorised person in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
 - 2.8 Control circuits are connected, inspected and tested without unnecessary waste of materials or damage to apparatus, circuits, the surrounding environment or services using sustainable energy practice
 - 3 Complete and document circuit development activities**
 - 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed

- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 'As-connected' control circuits are documented using standard drawing conventions and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Developing, connecting and functional testing must include at least four of the following electrical control circuits:

- machine interlocked circuit
- machine safety circuit
- motor jogging circuit
- multiple stop-start circuit
- single stop-start circuit
- time controlled circuit

Developing, connecting and functional testing must include at least three of the following components and electrical devices:

- contactors
- electromechanical relays
- programmable relays
- push buttons
- reduced voltage starters
- soft starters
- three phase starters
- variable speed drives

Developing, connecting and functional testing must include at least two of the following transducers/sensors:

- float switches
- light sensors
- limit switches
- photoelectric cells
- pressure switches
- proximity switches
- temperature sensors
- timers

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG109A Develop and connect electrical control circuits.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0005 Develop and connect electrical control circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.
Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- # applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including using risk control measures
- # applying sustainable energy principles and practices
- using manufacturers' catalogues to select:
 - circuit components for appropriate duty ratings
 - control devices for specified requirements
 - pushbuttons/pilot lamps for specific requirements
 - relays for specified requirements
 - the most suitable motor starter for a given situation
 - timers for specified functions
- # labelling wires and terminals
- converting circuit (schematic) diagrams to wiring diagrams
- # developing forward reverse circuit requiring interlocking from a description of the circuit operation, including jog and interlock functions
- developing:
 - electrical control circuit in accordance with a written description (specification) and listing the sequence of operation of the circuit
 - control circuit incorporating local and remote start and stop buttons and electrical interlocking
 - simple stop-start control circuit that incorporates pilot lights and latching circuit
 - timer controlled circuits from a written description and listing the sequence of circuit operation
- measuring starting current and torque of selected motor starters

- connecting and testing:
 - circuit with a braking feature to operate a three phase motor
 - control devices into control circuits
 - direct-on-line (DOL) motor starter and testing the operation of the power and control circuits
 - variable speed drive (VSD)
 - electronic (soft) starter
 - electrical circuits with local and remote start-stop control
 - input and output devices to a programmable relay using a diagram
 - motor starter power and control circuits for correct operation
 - multiple motor starting circuit which incorporates start, stop and jog control
 - simple electrical control circuit from circuit diagrams
 - timer controlled circuit using a circuit diagram as a guide
- completing and documenting circuit development activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- operating principles, basic contact configurations and identification and common applications of:
 - control relays
 - timers
 - contactors
 - thermal overloads
- control circuits, including:
 - converting circuit (schematic) diagrams to wiring diagrams
 - identification of circuit diagrams (schematic) symbols and explain the operation of components represented
 - switching configurations and common applications of push buttons
 - control circuit drawing conventions
- remote stop-start control and electrical interlocking, including:
 - operation of:
 - local and remote start-stop control of relays
 - operation of an electrically interlocked control circuit
 - applying circuit checking and testing techniques to an electrical control circuit
- time delay relays, including timer circuit checking and testing procedures
- circuits using contactors, including:
 - circuit diagram symbols

- circuit development using a contactor
- using contactors for motor control
- jogging and interlocking, including:
 - purpose and application of:
 - jogging control of motors
 - electrical/mechanical interlocking
 - operation of motor control using start, stop and jog buttons
- control devices, including:
 - common control devices used in automatic control circuits: limit switches, proximity switches, photoelectric cells, pressure switches, float switches, light sensors and temperature sensors
 - basic operating principles of common control devices
 - advantages and disadvantages of common control devices
 - applications for common control devices
- programmable relays, including:
 - advantages of programmable relays over electromagnetic control circuit control
 - typical applications of programmable relays
 - block diagram representation and basic operating principles
 - input and output parameters, listing, connections and output types
 - basic programming of ladder circuits consisting of inputs, outputs i.e. stop-start circuit
 - using the monitoring facility of the programmable relay to verify each ladder circuit operation
 - programming timers and using the monitoring facility of the programmable relay to check the values of the timer
 - external devices
 - implications of programming normally closed field devices
 - conversion of control circuits
 - common faults and their symptoms
- three phase induction motor starters, including:
 - reasons for limiting the starting current of large motors
 - requirements of AS/NZS 3000 and the local supply authority requirements, with regard to starting and control of motors
 - operating principles, applications and circuits for:
 - direct on line (DOL) starter
 - variable speed drive (VSD)
 - variable frequency drive (VFD)
 - electronic (soft) starter
- three phase induction motor starters - reduced voltage, including:
 - operating principles and circuits for reduced voltage starters
 - common applications for starter types

- comparison of motor starters basic characteristics
- three phase induction motor reversal and braking, including:
 - operating principles and control circuits for reversal and braking methods
 - comparison of the different braking methods used
 - typical applications for braking methods
- three phase induction motor speed control, including:
 - operating principles and circuits for motor speed control
- relevant manufacturer specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

In addition, evidence of Performance Evidence items of this unit marked with a hash (#) must be gathered in authentic workplace operational conditions (not simulated) before final determination of competence in this unit can be made.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0011 Evaluate performance of low voltage electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to evaluate performance of low voltage (LV) electrical apparatus.

It includes preparing evaluations, determining performance requirements, inspecting and setting up performance tests, evaluating inspection and test results and documenting test outcomes.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical devices and site rehabilitation.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to evaluate electrical apparatus

- 1.1** WHS/OHS processes and workplace procedures for a given work area are identified, obtained and applied
- 1.2** WHS/OHS risk control measures and workplace procedures in preparation for the work are followed
- 1.3** Inspection and testing area are checked for safety hazards and risk control measures implemented in accordance with WHS/OHS and workplace procedures
- 1.4** Relevant documentation is obtained and interpreted to identify the certification/approval specifications of the electrical apparatus to be assessed.
- 1.5** Advice is sought from the work supervisor to ensure the work is coordinated effectively with others
- 1.6** Tools, testing devices and materials required for work are obtained and checked for correct operation and safety

2 Evaluate electrical apparatus

- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
- 2.2** The need to test and measure live work is determined in accordance with WHS/OHS requirements and workplace procedures
- 2.3** Circuits/apparatus/plant are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** Assessment process of electrical apparatus performance requirements and testing methods applied are in accordance with relevant industry standards and workplace procedures
- 2.5** Apparatus inspection and test methods for relevant parameter/s are prepared in accordance with workplace procedures and relevant person/s advised
- 2.6** Apparatus inspection and tests are carried out in accordance with workplace procedures and results

	documented
	2.7 Unplanned situations are dealt with safely and with the approval of relevant person/s
	2.8 Assessment is carried out without damage to systems circuits, environment and/or services using sustainable energy practices
3 Complete work and document evaluated results	3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Inspection and test results are evaluated and non-compliance issues identified in accordance with workplace procedures
	3.4 Inspection and test results and comments on non-compliance issues are documented and reported to relevant person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Reporting performance of two different electrical apparatus must include at least the following:

- WHS/OHS
- electrical safety
- ergonomic operation
- testing against specification
- fit for purpose
- sustainable energy principles

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG131A Evaluate performance of low voltage electrical apparatus.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0011 Evaluate performance of low voltage electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - using risk control measures
- checking and isolating circuits/machines/plant
- dealing with unplanned situations in accordance with workplace procedures and safe work practices
- evaluating electrical apparatus
- identifying non-compliance defects
- interpreting compliance documents of equipment for assessments
- obtaining and checking tools, testing devices and materials required for work
- preparing to evaluate electrical apparatus
- reporting inspection and test results and non-compliance issues
- requesting advice and coordinating work with relevant person/s
- setting up and conducting appropriate inspections and tests of electrical apparatus
- testing and measuring live work environments
- using sustainable energy practices.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- problem-solving techniques
- relevant electrical machines and performance monitoring
- relevant machine inspection and test methods
- relevant manufacturer specifications and operating instructions
- relevant performance standards and regulatory requirements for electrical equipment
- relevant job safety assessments or risk mitigation processes

- relevant tools, testing devices and materials
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instructions, policies and procedures
- sustainable energy principles.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to evaluating performance of electrical apparatus
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic errors fixed in Performance Evidence

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to isolate, test and troubleshoot electrical circuits operating at voltages up to 1,000 volts (V) alternating current (a.c.) or 1,500 V direct current (d.c.).

It includes working safely, isolating electrical circuits, evaluating low voltage (LV) electrical circuits, applying systematic fault-finding procedures, conducting repairs and completing the necessary documentation.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical circuits and equipment which are designed to operate at voltages greater than 50 V a.c. or 120 V d.c.

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEEEL0047 Identify, shut down and restart systems with alternate supplies

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to isolate, test and troubleshoot electrical circuits

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Scope of work to be undertaken is determined from relevant documentation, electrical drawings or relevant person/s
- 1.2** WHS/OHS requirements and workplace procedures for a given work area are identified and applied
- 1.3** Electrical hazards are identified, risks are assessed, and control measures are implemented
- 1.4** Relevant industry standards, regulation, legislation and workplace procedures are identified and applied

	1.5	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others
2	Apply safe isolation, lock-out and tag-out procedures	
	2.1	Electrical circuits and conductors, all of their energy sources, and isolation points are identified
	2.2	Electrical circuits are isolated from all energy sources and secured in accordance with industry and regulatory standards
	2.3	Safe isolation from all sources of energy is confirmed
	2.4	Isolation is secured using appropriate devices, tags, lock-out or permit system
	2.5	Any stored energy is discharged and deenergisation proved
	2.6	Unused conductors and equipment are dealt with in accordance with regulatory requirements
3	Conduct compliance inspection and testing on electrical circuits	
	3.1	Electrical circuits are visually inspected for compliance with regulatory requirements
	3.2	Mandatory tests are identified, including sequence of tests and equipment required
	3.3	Continuity of the earthing system is tested for compliance with regulatory requirements
	3.4	Insulation resistance of the circuit is tested for compliance with regulatory requirements
	3.5	Polarity of the circuit is tested for compliance with regulatory requirements
	3.6	Correct circuit connections is tested for compliance with regulatory requirements
	3.7	Alternative supply systems are inspected and tested for compliance with industry and regulatory standards
	3.8	Earth fault loop impedance is verified for compliance with regulatory requirements
	3.9	Operation of residual current devices (RCDs) is tested for compliance with regulatory requirements

	3.10	Compliance test results are documented and reported in accordance with industry and workplace requirements
	3.11	Non-compliances are identified and reported to relevant personnel
	3.12	Requirements for the verification of circuits are completed in accordance with regulatory requirements
4	Locate, identify and repair faults in electrical circuits	
	4.1	Circuits/machines/plant are checked as being isolated, where necessary, in strict accordance WHS/OHS requirements and procedures
	4.2	Safety hazards resulting from the fault or breakdown are documented and risk control measures identified and implemented in consultation with appropriate person/s
	4.3	Troubleshooting of electrical circuits is undertaken methodically using measured and calculated values of circuit parameters
	4.4	Circuit components are dismantled and parts stored to protect against loss or damage
	4.5	Faulty circuits/components are rechecked and their fault status identified
	4.6	Materials/replacement parts required to rectify faults are sourced and obtained in accordance with workplace procedures
	4.7	Effectiveness of the repair is tested in accordance with workplace procedures
	4.8	Circuit is reassembled, tested and prepared for return to service
	4.9	Unexpected situations are dealt with safely and with the approval of authorised person/s
	4.10	Troubleshooting and repair activities are carried out without damage to equipment, circuits, the surrounding environment or services using sustainable energy practices
5	Complete work and document activities	
	5.1	WHS/OHS work completion risk control measures and workplace procedures are followed

- 5.2 Work area is cleaned and made safe in accordance with workplace procedures
- 5.3 Work completion is documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit must be demonstrated with circuits and equipment operating at voltages up to 1,000 volts (V) alternating current (a.c.) or 1,500 V direct current (d.c.) and must include:

Isolating, testing and troubleshooting LV electrical circuits and equipment must include safe isolation, visual inspection and mandatory testing of the following in accordance with industry standards, including one equipment type that has a dual supply, one circuit breaker and one high rupturing capacity (HRC) fuse:	• at least one of the following: • main switchboard • distribution board - and • at least three of the following: • motor • space heater • water heater • lights • socket outlets
Locating and diagnosing LV electrical circuit and equipment faults must include at least four of the following common faults in electrical circuits:	• open circuit • short circuit • incorrect connections • insulation failure • unsafe condition • equipment/component failure • related mechanical failure

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic errors fixed in Performance Evidence

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- # applying work health and safety (WHS)/occupational health and safety (OHS) workplace procedures, including:
 - # identifying and assessing hazards and risks, and implementing control measures
- # selecting and using correct tools and equipment to isolate, test and troubleshoot electrical circuits
- # performing safe isolation of equipment, including:
 - # preparing a safe work method statement (SWMS) or job safety analysis (JSA) for effective and safe isolation
 - # applying safe methods to identify sources of supply to be isolated
 - # identifying appropriate points of isolation
 - # isolating equipment from all sources of supply by safely switching off switches or circuit breakers, removing fuses or links, or removing circuit connections
 - # securely isolating devices by applying an isolation securing device which requires a deliberate action to engage or disengage
 - # applying a personal danger tag, lock-out or permit system
 - # applying safe methods to confirm effective and safe isolation from all sources of supply
 - identifying the limits of the safe work area
 - discharging any stored energy
 - # proving de-energisation of all relevant electrical equipment and conductors, including:
 - # testing the voltage tester on a known live source
 - # testing between all conductors and a known earth

- # testing between conductors
 - # retesting the voltage tester on a known live source for correct operation
- # correctly using personal protective equipment (PPE) whilst performing effective isolation and operation of low voltage (LV) equipment
- # completing visual inspection of the electrical installation for compliance with regulatory requirements including:
 - # protection requirements
 - # general condition
 - # mains/sub-mains
 - # switchboards
 - # wiring systems
 - # equipment and accessories
 - # earthing
- # conducting mandatory testing to ensure:
 - # compliance with AS/NZS 3000 mandatory test requirements and the application of mandatory tests following guidance of AS/NZS 3017
 - # insulation resistance of mains, sub-mains and final sub-circuits meets the regulatory requirements
 - # earth continuity of the main earthing conductor, protective earthing conductors, combined protective earthing and neutral (PEN) conductors and bonding conductors meet the regulatory requirements
 - # polarity of active, neutral and earth conductors including phase sequence and rotation meet the regulatory requirements
 - # correct connections of active, neutral and protective earthing conductors are tested to ensure no short circuits between conductors, no transposition of conductors that could result in the earthing system or exposed conductive parts becoming energised, and no interconnection of conductors between different circuits, in accordance with regulatory requirements
 - # verification that earth fault-loop impedance limitations are not exceeded in accordance with regulatory requirements
 - # residual current devices (RCDs) have been correctly installed, their function verified, and the isolation of all switched poles verified, in accordance with regulatory requirements
- testing and verifying alternate supplies, including:
 - completing continuity and voltage testing, including output voltage of device/s
 - earth resistance testing, including:
 - continuity of main earthing conductor
 - checking earth bonding integrity and equipotential bonded parts
 - insulation resistance test
 - polarity and checking operation of control device/s
- verifying records for the date of initial certification are completed in accordance with regulatory requirements

- # locating and diagnosing common faults in electrical circuits
- testing and diagnosing high impedance or open circuit neutral fault
- # repairing and/or replacing parts to rectify faults in accordance with AS/NZS 3000
- # applying steps required to ensure the fault does not re-occur
- # completing final testing and re-commissioning
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- safety procedures for working on electrical systems, circuits and equipment
- safe working practices as a normal part of carrying out electrical installation work
- tools and equipment needed to conduct electrical installation compliance inspection and testing
- legislation and regulations that require circuits and equipment to be inspected and tested to ensure they are safe
- the person/bodies responsible for the various aspects of ensuring electrical installations are safe
- results of periodic inspection and tests that show construction site wiring and equipment is safe to use
- results of periodic inspection and tests that show electrical equipment are safe to use
- visual inspection of the electrical installation for compliance with regulatory requirements, including:
 - protection requirements
 - general condition
 - mains/submains
 - switchboards
 - wiring systems
 - equipment and accessories
 - earthing
- regulatory requirements related to compliance testing, including:
 - insulation resistance of mains, sub-mains and final sub-circuits
 - earth continuity of the main earthing conductor, protective earthing conductors, combined protective earthing and neutral (PEN) conductors, and bonding conductors
 - polarity of active, neutral and earth conductors including phase sequence and rotation
 - correct connections of active, neutral and protective earthing conductors are tested to ensure no short circuits between conductors, no transposition of conductors that could result in the earthing system or exposed conductive parts becoming energised, and no interconnection of conductors between different circuits
 - earth fault-loop impedance in both 'supply available' and 'no supply available' scenarios

- correct installation of RCDs, verification of their function, and verification of isolation of all switched poles
- testing requirements where multiple/alternate supplies are present, including anti-islanding
- AS/NZS 3000 requirements for dealing with unused conductors and equipment
- importance of the MEN link when a fault occurs.
- likely consequences of the absence of the MEN link or high impedance in the PEN conductor when a fault occurs
- requirements for installation of an MEN link in an installation and an outbuilding
- safety implications of high impedance or open circuit neutral faults
- ensure active/s and neutral for the same circuit are clearly identified with their circuit protection device
- tests that show all circuits and equipment operate as intended
- results of tests conducted on an installation to comply with requirements and ensure the installation is safe
- documentation of periodic testing and inspection of electrical equipment, including tagging requirements in accordance with AS/NZS 3760
- techniques and procedures for the effective safe isolation of any equipment, including:
 - preparation of a SWMS or JSA for effective safe isolation
 - safe methods for identifying source of supply to be isolated, including alternate supplies
 - switching-off, lock-out and tagging procedures
 - safe methods for confirming effective and safe isolation of all energy sources
 - industry standards related to isolation
- techniques and procedures for testing and verification of alternate supplies, including:
 - purpose of tests, testing methods and equipment
 - use of continuity and voltage testing meters
 - direct current (d.c.) polarity, including switching and protection equipment
 - earthing arrangements
- troubleshooting concepts, including:
 - need to understand the correct operation of a circuit or equipment, switching and control circuit arrangements
 - common faults with circuits and equipment, including:
 - operator faults
 - incorrect connections
 - open circuits
 - short circuits
 - device faults (mechanical)
 - equipment/component failure
 - supply faults
 - insulation failure
 - unsafe conditions

- earth leakage
- typical fault symptoms and their causes, including:
 - operation of circuit protective device
 - appliance does not operate
- factors to consider in clarifying the nature of a fault, including:
 - initial fault report
 - confirmation of symptoms of the fault
 - comparison of symptoms with normal operation
- methods for testing, including:
 - visual inspection
 - component isolation
 - test equipment
 - sectional testing
- dealing with intermittent faults (vibration, shock, changes in temperature and electromagnetic interference)
- final testing and recommissioning
- hazards and safety requirements related to equipment incorporating electronic components used in electrical systems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

In addition, evidence of Performance Evidence items of this unit marked with a hash (#) must be gathered in authentic workplace operational conditions (not simulated) before final determination

of competence in this unit can be made.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0020 Solve problems in low voltage a.c. circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to ascertain correct operation of single and three phase alternating current (a.c.) circuits and solving circuit problems as they apply to servicing, fault finding, installation and compliance work functions.

It includes safe working practices, multi-phase circuit arrangements, issues related to fault protection, power factor and multiple earthed neutral (MEN) systems and solutions to circuit problems derived from calculated and measured parameters.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) a.c. or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify low voltage (LV) a.c. circuit problem

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures for work area are identified and applied
- 1.2** Hazards are identified, risks are assessed and control measures and workplace procedures are implemented
- 1.3** Safety hazards which have not previously been identified are noted on job safety assessments and existing risk control measures are implemented
- 1.4** Circuit problems are identified from documentation or work supervisor to determine the scope of work
- 1.5** Advice is sought from the work supervisor to ensure work is coordinated effectively with others
- 1.6** Sources of materials required for work are identified in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices to carry out work are obtained and checked for correct operation and safety

2 Solve LV a.c. circuit problems

- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 2.2** Need to test or measure live work is determined in accordance with WHS/OHS requirements and, as required, conducted in accordance with workplace safety procedures
- 2.3** Circuits/machines/plant are checked and isolated, as required, in accordance with WHS/OHS requirements

and workplace procedures

- 2.4 Methodical techniques are used to resolve circuit problems from measured and calculated values as they apply to single and three phase LV circuits in accordance with workplace procedures
- 2.5 Existing circuits are altered to comply with power factor correction in compliance with industry standards
- 2.6 Power factor of a circuit is calculated from given measurements
- 2.7 Low power factor is improved by altering the reactive power of a circuit
- 2.8 Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- 2.9 Problems are resolved without damage to apparatus, circuits, the surrounding environment or services using sustainable energy practices

3 Complete work and document activities

- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to resolve circuit problems is documented in accordance with workplace procedures
- 3.4 Work completion is documented and an appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Solving problems in a.c. circuits must include:	• determining the operating parameters of existing circuits • altering an existing circuit to comply with specified operating parameters • developing circuits to comply with a specified function and operating parameters of voltage, current, impedance, power and power factor • determining the cause of low power factor in an existing circuit • determining conditions causing an existing circuit to be unsafe, including electric shock hazard from indirect contact with conductive parts.
Solving problems in single phase circuits must include:	• connecting single phase circuits • choosing correct instruments • taking measurements correctly and accurately.
Solving problems in three phase circuits must include:	• connecting three phase circuits • choosing correct instruments • taking measurements correctly and accurately.
Solving problems in LV a.c. circuits must include at least four of the following applications:	• series a.c. circuits • parallel a.c. circuits • series/parallel a.c. circuits • single phase motors/controls • three phase motors/controls • synchronous machines • transformers/auxiliary components • star connected circuits • delta connected circuits • star-delta interconnected circuits • open delta circuits.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG102A Solve problems in low voltage a.c. circuits.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0020 Solve problems in low voltage a.c. circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements Including:
 - implementing OHS/WHS workplace procedures and practices, including risk control measures
 - safely measuring the parameters for the whole or any part of a circuit
- measuring:
 - instantaneous, peak, peak-to-peak values and the period of a sinusoidal waveform
 - the phase angle between two or more alternating quantities from a given sinusoidal waveform diagram
 - the fault-loop impedance of typical circuits
 - the branch currents and voltages in a series and parallel resistance inductance capacitance (RLC) circuit and use a phasor diagram to determine the total current and phase angle between circuit voltage and circuit current
- determining:
 - phase relationship between two or more sinusoidal waveforms from a given diagram
 - the impedance, current and voltages and phase angles for a series and parallel resistance capacitance (RC), resistance inductance (RL), and RLC circuit given the resistance, capacitance, inductance and supply voltage
 - comparison of current limiting characteristics of inductors and resistors
 - the relationship between inductive reactance and capacitive reactance and frequency
 - difference between true power, apparent power and reactive power and the units in which these quantities are measured
 - the root-mean-square (rms) value of line and phase, voltage and current given any one of these quantities

- the effects of a high impedance in the neutral conductor of a three phase four wire system supplying an unbalanced load where multiple earthed neutral (MEN) earthing is employed
- the value of neutral current in an unbalanced three phase four wire systems given line currents and power factors
- how the power factor of a three phase installation can be improved
- fault loop impedance using resistance and reactance values from relevant industry standards
- voltage, current and resistance from measured or given values of any two of these qualities
- the phase sequence of a three phase supply
- drawing and labelling the following:
 - the power triangle to show the relationships between true power, apparent power and reactive power
 - the typical combinations of three phase interconnected systems using star and delta connection
 - the impedance triangle for a series RC, RL and RLC circuit
 - the equivalent circuit of a practical inductor
 - phasor diagrams to show:
 - the relationship between two or more alternating current (a.c.) values of voltage and/or current, including 'in-phase', 'out-of-phase', 'phase angle', 'lead' and 'lag'
 - a series and parallel RC, RL, and RLC circuits
- calculating:
 - rms value of voltage generated in each phase given the maximum value
 - terms in relation to a sinusoidal waveform from values of root-mean-square (rms) value, frequency, peak voltage, period and instantaneous value
 - capacitive reactance and inductive reactance for a given capacitor and inductor
 - total impedance for a series and parallel RLC circuit
- connecting a three-phase star and delta load
- setting up and connecting a single-source resistive a.c. circuit and taking voltage and current measurements to determine the resistance
- applying sustainable energy principles and practices
- completing workplace documentation
- voltage, current and reactance of inductive and capacitive reactance by applying Ohm's law in purely inductive and capacitive a.c. circuits given any two quantities
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- determining conditions causing an existing circuit to be unsafe
- dealing with unplanned events.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- a.c. quantities, including:
 - Pythagoras theorem to a right-angle triangle
 - sine, cosine and tangent ratios of a right-angle triangle
 - sinusoidal voltage generated by a single turn coil rotated in a uniform magnetic field and resulting current
 - terms in relation to a sinusoidal waveform involving:
 - period
 - maximum value
 - peak-to-peak value
 - instantaneous value
 - average value
 - rms value
 - use of a cathode-ray oscilloscope (CRO) to measure d.c. and a.c. voltage levels
- phasor diagrams, including:
 - convention for representing voltage, current and the reference quantity in a phasor diagram
 - purpose of phasor diagrams
- single element a.c. circuits, including:
 - applications of capacitive, inductive and resistive a.c circuits
 - defining inductive and capacitive reactance
 - relationship between voltage drops and current in resistive a.c. circuit
 - arrangement, characteristics of single item inductive and capacitive circuits
- RC and RL series a.c. circuits, including:
 - capacitive and inductive components in power circuits and systems and the effect on the phase relationship between voltage and current
 - impedance and impedance triangle
 - voltage triangle
 - arrangement, characteristics, and relationship between resistance, capacitance and inductance in RL, RC, and LC series circuits
- RLC series and parallel a.c. circuits, including:
 - practical examples of RLC series and parallel circuits
 - voltage and current triangle
 - relationship between resistance, capacitance and inductance in RLC parallel circuits
- power in an a.c. circuit, including:
 - definition of power factor and phase angle
 - methods used to measure single phase power, energy and demand

- effects of low power factor
- power factor improvement, including:
 - requirements for power factor improvement
 - methods used to improve low power factor of an installation
 - local supply authority and AS/NZS 3000 requirements regarding the power factor of an installation and power factor improvement equipment
 - local supply authority and AS/NZS 3000 requirements for installation of capacitors including safety considerations
 - using manufacturer catalogues to select power factor equipment for a particular installation
- harmonics and resonance effect in a.c. systems, including:
 - conditions in a series and parallel a.c. circuit that produce resonance
 - dangers of series and parallel resonance circuits
 - methods and test equipment used to test for harmonics
 - methods used to reduce harmonics in a.c. power system
 - problems that may arise in a.c. circuits as a result of harmonics and how these are overcome
 - sources in a.c. systems that produce harmonics
 - term harmonic in relation to the sinusoidal waveform of an a.c. power system
- three phase systems, including:
 - features of a multi-phase system
 - comparison of voltages generated by single and multi-phase alternators
 - how three phase is generated in a single alternator
 - advantages of three phase for power systems
 - relationship between the phase voltages generated in a three phase alternator and the conventions for identifying each
 - method of determining the phase sequence or phase rotation of a three-phase supply
- three phase star connections, including:
 - arrangement and characteristics of a three phase star connection
 - effect of a reversed phase winding of a star connected alternator
 - examples of balanced and unbalanced loads in typical power systems
 - terms balanced load and unbalanced load
- three phase four wire systems, including:
 - purpose of the neutral conductor in three phase four wire systems
 - AS/NZS 3000 requirements regarding neutral conductors
 - AS/NZS 3008.1.1 Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions method for determining voltage drop in unbalanced three phase circuits
- three phase delta connections and interconnected systems, including:
 - arrangement and characteristics of a three phase delta connection
 - effect of a reversed phase winding of a delta connected transformer

- examples of loads in typical power systems
- limitations and uses of open delta connections
- energy and power requirements of ac systems, including:
 - purposes for measuring power, energy, power factor and maximum demand of a.c. power systems and loads
 - difference between true power, apparent power and reactive power and the units in which these quantities are measured in a three phase system
 - methods used to measure three phase power, energy, power factor and demand
 - using manufacturers catalogues to select measurement equipment for a particular installation
- fault-loop impedance, including:
 - procedures for testing fault-loop impedance
 - term fault-loop impedance of an a.c. power system
- local requirements and relevant industry standards relating to:
 - the installation of capacitors
 - the power factor of an installation and power factor improvement equipment
 - harmonics and resonance effect in a.c. power systems
 - neutral conductors
- phase relationship between line and phase voltages and line and phase currents of star, delta, and typical interconnected systems using star connections and delta connections
- relevant manufacturers' specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications,

regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to determine correct operation of electromagnetic devices and related circuits and provide solutions as they apply to electrical installations and equipment.

It includes working safely; applying power circuit problem-solving processes, including the use of testing and measuring devices; and providing solutions derived from measurements and calculations to predictable problems in electromagnetic devices and related circuits.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work with electromagnetic devices and circuits

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 WHS/OHS requirements and workplace procedures for a given work area are identified and applied

1.2 Device/s and/or circuit/s problems are identified from documentation or work supervisor to determine scope of work

1.3 Hazards are identified, risks are assessed and control measures are implemented

1.4 Tools, equipment and testing devices to carry out work are obtained and checked for correct operation and safety

1.5 Circuits are checked and isolated in accordance with workplace procedures and regulatory requirements

1.6 Advice is sought from the work supervisor to ensure work is coordinated effectively with others

2 Solve electromagnetic device and/or circuit problems

2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed

2.2 Need to test or measure live work is determined in accordance with WHS/OHS job safety assessment requirements and work is conducted using safety control measures workplace procedures

2.3 Relevant circuits and devices are checked as being isolated, as required, in accordance with WHS/OHS

requirements and workplace procedures

- 2.4 Operating parameters of an existing circuit with an electromagnetic device are determined
- 2.5 Methodical techniques are used to resolve circuit problems from measured and calculated values as they apply to electromagnetic devices/circuits
- 2.6 Existing circuit with an electromagnetic device is altered to comply with specified operating parameters
- 2.7 Circuit with electromagnetic device is developed to comply with a specified function and operating parameters
- 2.8 Electrical equipment is connected and tested to determine correct operation
- 2.9 Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- 2.10 Problems are resolved without damage to apparatus, circuits, the surrounding environment or services using sustainable energy practices

3 Complete work and documentation

- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to resolve problems is documented in accordance with established workplace procedures
- 3.4 Work completion is documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Electromagnetic devices must include at least three of the following devices:

- reed switches
- solenoids
- relays
- contactors
- inductive limit switches
- lifting magnets
- core balance devices
- magnetic overloads
- magnetic brakes
- magnetic circuit breakers.

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0021 Solve problems in magnetic and electromagnetic devices

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - identifying hazards and assessing risks and applying control measures
 - confirming isolation of circuits
- using methodological techniques to solve problems in circuits with an electromagnetic device from measured and calculated values
- determining the operating parameters of an existing circuit with an electromagnetic device, including:
 - the direction of magnetic field around a current-carrying conductor and a coil
 - a current-carrying conductor under the influence of a magnetic field
- modifying an existing circuit with an electromagnetic device to comply with specified operating parameters
- connecting electromagnetic devices to comply with a specified function and operating parameters
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- magnetism, including:
 - common magnetic and non-magnetic materials
 - magnetic field patterns of magnets

- magnets attraction and repulsion when brought in contact with each other
- practical applications of magnets
- principle of magnetic screening (shielding) and its applications
- electromagnetism, including:
 - conventions representing direction of current flow in a conductor
 - direction of force between adjacent current-carrying conductors
 - effect of current, length and distance apart on the force between conductors
 - magnetic field around an electromagnet, a single conductor and two adjacent conductors carrying current
 - magnetomotive force (mmf) and its relationship to the number of turns in a coil and the current flowing in the coil
 - practical applications of electromagnets
- magnetic circuit types and associated terminology
- methods used to reduce electrical losses in a magnetic circuit
- electromagnetic induction, including:
 - principle of electromagnetic induction
 - applications of electromagnetic induction
 - Lenz's law
- inductance, including:
 - applications of the different types of inductors
 - industry standard symbols for inductors
 - types of inductor cores
 - construction of an inductor
 - definition of terms: self-induction, inductance and mutual inductance, and time constants
 - effect of physical parameters on the inductance of an inductor
 - relationship between load voltage, current and self-induced electromagnetic force in a direct current (d.c.) circuit having inductance
 - practical applications for the effects of self and mutual induction
 - undesirable effects of self and mutual induction
- magnetic principles in measurement instruments
- magnetic devices, including:
 - operation and application of:
 - magnetic sensing devices
 - contactors and relays
 - solenoids
 - magnetic methods used to extinguish the arc between opening contacts
- relevant manufacturer specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.
Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to terminate cables, cords and their conductors at accessories and current-using devices, designed to operate at voltages up to 1,000 volts (V) alternating current (a.c.) or 1,500 V direct current (d.c.).

It includes working safely to industry standards, wiring systems, cable types and applications; selecting appropriate termination accessories; preparing and terminating cables and cords; terminating cables/cord conductors; and ensuring completed termination complies with industry standard requirements.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 V a.c. or 120 V d.c.

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to terminate cables, cords and conductors

2 Terminate cables, cords and conductors

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	WHS/OHS requirements and workplace procedures for a given work area are identified and applied
1.2	Hazards are identified, risks assessed and risk control measures and workplace procedures implemented in accordance with workplace procedures
1.3	Safety hazards that have not previously been identified are noted on job safety assessments and existing risk control measures are implemented
1.4	Junction box/terminal enclosures and terminal types are inspected to determine the type and size of cable and conductor termination devices needed
1.5	Tools, materials and testing devices needed for terminating cables and cords are obtained in accordance with workplace procedures and checked for correct operation and safety
2.1	WHS/OHS risk control measures and procedures for carrying out the work are followed
2.2	Circuits/machines/plant are checked as isolated, as

required, in accordance with WHS/OHS requirements and workplace procedures

- 2.3 Cable/cord ends are cut and sheath/insulation stripped with sufficient length to prevent strain on terminations and without undue waste
 - 2.4 Cable glands/retaining devices are fitted and secured to ensure cable/cord cannot be pulled out of entry into junction box/terminal enclosure
 - 2.5 Conductors are prepared to suit the terminal type they are to be connected to
 - 2.6 Conductors are terminated to ensure continuity across the terminal
 - 2.7 Methodology for dealing with unplanned situations are discussed with appropriate person/s and documented
 - 2.8 Unplanned situations are responded to safely in accordance with workplace procedures, in a manner that minimises risk to personnel, equipment and with the approval of an authorised person
- 3 Test terminated cables and cords**
- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
 - 3.2 Terminated cables are tested to ensure continuity and insulation resistance comply with relevant industry standards

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Terminating cables, cords and accessories must include at least five of the following types of cables each at a junction box and a

- circular thermoplastic sheathed (TPS)
- flat TPS
- flexible cables

device terminal enclosure:

- flexible cords
- fire protection cables
- steel wire armoured (SWA) cables
- thermoplastic insulated (TPI) cables.

Terminating conductors must include the following terminal types:

- screw terminal
- stud terminal
- tunnel terminal.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG106A Terminate cables, cords and accessories for low voltage circuits.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.
Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- # applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including using risk control measures
- # applying sustainable energy principles and practices
- # confirming relevant circuits are isolated
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- # terminating wiring and accessories for low voltage circuits, including:
 - # cutting cable ends and stripping sheath/insulation to a sufficient length
 - # fitting and securing cable glands/retaining devices correctly
 - # preparing and terminating conductors to suit the type of terminal at which they are to be connected
 - # selecting appropriate cable/cord and conductor devices
 - # testing completed cables to ensure compliant continuity and insulation resistance
- # inspecting junction box/terminal enclosures and determining the type and size of required cable and conductor termination devices
- # testing terminated cables and cords.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- cable types and terminations, including:

- application of various cords and cables types, as defined by the properties of their insulation, sheathing, armouring and/or screening
- Australian and international colour standards for cords and cables
- single cables, flexible cables, flexible cords, screened cables, armoured cables, other similar and like cables
- construction of common cables
- identification of cords and cables by conductor size, type and rating
- identification of hardware used in terminating cords and cables
- requirements to protect and support cables adequately (protection against mechanical damage, protection from adverse temperatures and corrosion and protection from magnetic field that may affect the performance of the cable)
- structural components of cables and their purpose (conductor material, stranding, insulation type, voltage rating, screening, sheathing, armour and serving)
- techniques for termination of cords and cables using crimp lugs, tunnel connectors, soldering and solderless lugs
- cords, cables and plugs, including:
 - techniques for selection of flexible cords for given applications
 - preparation of cord ends for connection
 - fitting standard three pin plug tops and extension sockets to flexible cords
 - connecting a variety of plug tops and extension sockets to different flexible cord types
- flat thermoplastic sheathed (TPS) wiring systems, including techniques for:
 - installation of flat TPS cable in trunking and duct for the supply of socket outlets
 - using flat TPS cable for lighting looms
- circular TPS wiring systems, including techniques for:
 - installation of circular TPS cables on cable ladder/tray
 - installation of circular TPS cable
- thermoplastic insulated (TPI) cables in non-metallic enclosures, including techniques for:
 - cutting and setting rigid non-metallic ducting, trunking and conduit and accessories
 - installation of circuits using TPI cables in non-metallic enclosures
- TPI cables in metallic enclosures, including techniques for:
 - fitting metallic conduit to metallic trunking and accessories
 - cutting, threading and setting metallic conduit
 - installation of circuits using TPI cables in metallic conduit, ducting and trunking
- fire protection cabling and systems encompassing:
 - requirements when passing a wiring system through a fire rated wall or floor
 - techniques for recognising different fire protection cable types
 - techniques for installation and termination of fire protection cable
- steel wire armoured (SWA) cables, including techniques for:
 - identifying accessories used with SWA cables
 - installation of circuits using SWA cables
- trailing cables and catenary systems, including techniques for:

- identifying equipment used with trailing cable and catenary systems
- installation of catenary wiring systems
- installation of trailing cable systems supplying pendant sockets
- relevant industry standards and testing requirements for safe operation relating to:
 - cords, cables and plugs
 - circular and flat TPS wiring systems
 - TPI cables in non-metallic enclosures
 - TPI cables
 - fire protection cabling
 - SWA cables
 - trailing cables and catenary systems
- relevant manufacturer specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

In addition, evidence of Performance Evidence items of this unit marked with a hash (#) must be gathered in authentic workplace operational conditions (not simulated) before final determination of competence in this unit can be made.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographical error fixed in performance criteria 2.5

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to test and connect alternating current (a.c.) rotating machines. It includes safe working practices, ascertaining correct operation of a.c. machines and solving problems as they apply to servicing, fault finding, installation and compliance work functions

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) a.c. or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to test and connect a.c. rotating machines

2 Test and connect a.c. rotating machines

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Nature of machine/s problem is obtained from relevant documentation or work supervisor to determine scope of work
- 1.2** WHS/OHS requirements and workplace procedures for a given work area are identified and applied
- 1.3** Hazards are identified, risks are assessed, and control measures are implemented
- 1.4** Materials required for work are determined in accordance with workplace procedures
- 1.5** Tools, equipment and testing devices required for work are obtained and confirmed fit for purpose and serviceable in accordance with workplace procedures
- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 2.2** Need to test or measure live work is determined in accordance with WHS/OHS job safety assessment

requirements and work is conducted using safety control measures and workplace procedures

- 2.3 Relevant circuits, machines and/or plant are checked as being isolated, as required in accordance with WHS/OHS requirements and workplace procedures
- 2.4 Problem-solving techniques are used to resolve problems from measured and calculated values as they apply to a.c. rotating machines
- 2.5 Machine is verified as electrically safe and connected to electrical supply and commissioned in accordance with workplace procedures and industry standards
- 2.6 Unplanned situations are dealt with safely and with the approval of an authorised person/s
- 2.7 Problems dealt with safely and without damage to machines, the surrounding environment or services using sustainable energy practices

3 Complete work and document activities

- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to solve problems is documented in accordance with workplace procedures
- 3.4 Work completion is documented and an appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Testing and connecting a.c. rotating machines must include at least three of the following types of motor (must include at least one single phase and one three phase):

- capacitor start capacitor run motors
- capacitor start motors
- permanent magnet motor
- permanently split capacitor motor
- portable generator
- shaded pole motor
- split phase motors
- standby generator
- three phase squirrel-cage motor
- three phase synchronous generator
- three phase synchronous motor
- three phase wound rotor motor
- universal motor.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0024 Test and connect alternating current (a.c.) rotating machines

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographical error fixed in performance criteria 2.5

Workplace evidence requirements updated in Performance Evidence and Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- # applying work health and safety (WHS)/occupational health and safety (OHS) workplace procedures, including:
 - # identifying and assessing hazards and risks, and implementing control measures
 - # checking circuits are isolated in accordance with workplace procedures and regulatory requirements
- # applying testing and connecting techniques in alternating current (a.c.) rotating machines, including:
 - # connecting, running and reversing the direction of a single phase motor
- applying testing and connecting techniques in alternating current (a.c.) rotating machines, including:
 - connecting three phase induction motor in both star and delta connections
 - connecting, running and reversing the direction of a three phase motor
 - determining the operating parameters of existing machines
 - altering an existing machine connection or circuit to comply with specified operating parameters
 - developing machines/circuits to comply with a specified function and operating parameters
 - determining the cause of low efficiency in an existing machine
 - performing insulation resistance, continuity and winding identification tests
 - identifying faults/faulty components in single and three phase motors
 - testing insulation resistance of a three phase induction motor prior to connection to the

supply

- testing winding resistance (ohmic value and continuity) of a three phase induction motor prior to connection to the supply
- # applying sustainable energy principles and practices
- completing problem-solving activities documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- operating principles of three phase induction motors, including:
 - speed of rotation of a rotating magnetic field
 - relationship between the rotor speed, slip and rotor frequency
 - basic principle of operation of an induction motor
 - motor action in a generator and generator action in a motor
- three phase induction motor construction, including:
 - basic component parts of a three phase induction motor
 - types of rotors (standard and wound) used in three phase induction motors
 - connections for three phase induction motor in both star and delta
- three phase induction motor characteristics, including:
 - relationship between torque, speed, and power and interpretation of speed/torque curves of induction motors
 - squirrel cage motors operating characteristics conditions necessary for an induction motor to produce maximum torque
 - operating characteristics of an induction motor from nameplate information and by measurement
 - induction motors efficiency and minimum energy performance standards (MEPS)
 - full load efficiency and power factor of induction motors
- split phase - single phase motors, including:
 - identification of split phase induction motors
 - principles of operation of a split phase induction motor
 - construction and basic characteristics of a split phase induction motor
 - applications of split phase induction motors
- single phase motors – capacitor and shaded pole types, including identification of single phase induction motors, including:
 - capacitor start
 - capacitor start/capacitor run, permanent split capacitor (PSC) and shaded pole
 - principles of operation of each motor type listed above
 - operating characteristics and typical applications of each motor type listed above
 - reversing the direction of rotation of each of the motors listed above

- single phase motors – series universal, including:
 - principles of operation of a series universal motor
 - identification and functions of each of the basic parts of a series universal motor
 - operating characteristics and typical uses for a series universal motor
- motor protection, including:
 - reasons why motor protection is required
 - requirements of the AS/NZS 3000 with regards to motor protection
 - types of motor overload protection
 - operating principles of thermal cut-out devices, thermal and magnetic motor protection devices for single and three phase motors
 - electrical features of motor protection high rupturing capacity (HRC) fuses
 - effects of undervoltage and overvoltage on motors and motor circuits
 - effects of repetitive starting and/or reversing on motors
 - special requirements for motor protection in high humidity or moist environments, high temperature areas and corrosive atmospheres
 - operating principles of phase failure protection
 - selecting suitable protective devices for a given motor and starter combination
- three phase synchronous machines- operation principles and construction, including:
 - power transfer diagram of an a.c. synchronous machine
 - generation of a sinusoidal waveform
 - operation of a synchronous alternator
 - operation of a synchronous motor
 - principles of operation of an asynchronous generator (induction generator)
 - identification of main parts of a synchronous alternator/motor
 - methods used to provide the excitation of a synchronous alternator/motor
 - block diagram of an alternator voltage regulator
 - advantages gained by the parallel operation of alternators
 - starting methods of synchronous motors
- alternators and generators, including:
 - effects on the generated voltage of variations in excitation
 - effects on generated voltage of variations in load current and power factor
 - identification of characteristic curves of an alternator
 - types of prime movers used with single and three phase portable/standby alternators
 - manual operation of single and three phase portable/standby alternators
 - ratings of single and three phase portable/standby alternators
 - applications of single and three phase portable/standby alternators
 - construction details of single and three phase portable/standby alternators
 - common faults found in portable/standby alternators
 - parallel connection
 - load sharing

- standby generators and associated arrangements
- safe testing methods for locating faults in low voltage (LV) a.c machines, including:
 - insulation resistance
 - coil resistance
 - centrifugal switch
 - capacitor
 - bearing wear
 - locked rotor
 - load
 - thermal overload
 - machine controls
- mechanical faults and associated symptoms that occur in LV a.c rotating machines, including:
 - bearings
 - fans
 - bent shaft
 - locked rotor
 - blocked air vents
 - centrifugal switches
 - environmental factors
- faults on driven loads and couplings and their consequences, including:
 - slipping belts
 - poorly aligned coupling (shims)
 - vibration
 - loads bearing failing
 - load stalling
- electrical faults and associated symptoms that occur in LV a.c rotating machines, including:
 - open and partially open circuit winding
 - short and partially short circuit winding
 - open circuit rotor
 - burnt out winding
 - coil shorted to frame
- relevant manufacturer specifications.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

In addition, evidence of Performance Evidence items of this unit marked with a hash (#) must be gathered in authentic workplace operational conditions (not simulated) before final determination of competence in this unit can be made.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0025 Test and connect transformers

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Performance criteria numbering corrected in element 2

Typographic error fixed in performance criteria 2.5

Workplace evidence requirements removed from Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve problems in transformers. It includes safe working practices, ascertaining correct operation of transformers and solving problems as they apply to servicing, fault finding, installation and compliance work functions.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to test and connect transformers

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures for a given work area are identified and applied
- 1.2** Hazards are identified, risk are assessed and control measures and workplace procedures are implemented
- 1.3** Safety hazards which have not previously been identified are noted on job safety assessments and existing risk control measures are implemented
- 1.4** Nature of transformer problem is obtained from documentation, service manual or work supervisor to determine scope of work
- 1.5** Advice is sought from work supervisor to ensure the work is coordinated effectively with others
- 1.6** Materials required for work are determined in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation

and safety

2 Solve problems in transformers

- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 2.2** Need to test or measure live work is determined in accordance with WHS/OHS job safety assessment requirements and work is conducted using safety control measures workplace procedures
- 2.3** Relevant circuits, machines and/or plant are checked as being isolated, as required, in accordance with WHS/OHS requirements and workplace procedures
- 2.4** Problem-solving methods are used to resolve problems from measured and calculated values as they apply to transformers
- 2.5** Transformer is verified as electrically safe and connected to electrical supply and commissioned in accordance with workplace procedures and industry standards
- 2.6** Problems are resolved without damage to circuits, the surrounding environment or services using sustainable energy practices

3 Complete work and document activities

- 3.1** WHS/OHS work completion risk control measures and workplace procedures are followed
- 3.2** Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3** Justification for solutions used to solve machine problems is documented in accordance with workplace procedures
- 3.4** Work completion is documented and an appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training package Companion Volume Implementation Guide.

Testing and connecting transformers must be demonstrated in relation to solving problems in any three of the following transformers:

- power transformers
- current transformers
- voltage transformers
- auto-transformers
- isolation transformers
- welding transformers
- step-up and step-down transformers

Unit Mapping Information

No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0025 Test and connect transformers

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Performance criteria numbering corrected in element 2

Typographic error fixed in performance criteria 2.5

Workplace evidence requirements removed from Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
 - identifying and assessing hazards and risks, and implementing control measures
 - applying safe working procedures when connecting and testing transformers
 - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
- solving problems with transformers, including:
 - determining the operating parameters of an existing transformer
 - altering an existing transformer circuit to comply with specified operating parameters
 - developing transformer circuits to comply with a specified function and operating parameters
 - determining the cause of low efficiency in an existing transformer
 - determining conditions causing an existing circuit to be unsafe
- determine polarity markings for an unidentified single phase double wound transformer
- determining the value of a transformers secondary voltage and current from nameplate data when solving problems in transformer operations
- determining voltage and current in the windings of an auto-transformer by calculation
- selecting transformers for specific application
- testing serviceability of transformers
- applying sustainable energy principles and practices

- completing problem-solving activities documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- AS/NZS 3000 Electrical installations requirements and restrictions on the installation and use of transformers
- methods used to insulate low voltage (LV) and high voltage (HV) transformers
- types of information stated on transformer nameplates
- types of lamination style and core construction used in transformers
- relevant industry standards relating to transformers
- application of transformers
- transmission and distribution transformers
- construction of voltage transformers
- ratings of voltage transformers
- auto-transformers and instrument transformers, including:
 - advantages and disadvantages of an auto-transformer
 - risks and safety control measures associated with connection and disconnection of instrument transformers
 - connection diagrams for instrument transformers
 - applications for auto-transformers and instrument transformers
 - construction of current transformers
 - ratings of current transformers
- transformer operation, including:
 - principles of mutual induction of a transformer
 - factors that determine the induced voltage in a transformer winding
 - determining the value of a transformers secondary voltage and current given one winding's electrical details and turns ratio
 - identification of voltage and current components of a phasor diagram for a transformer on no-load
 - principles of power transferred from the primary to secondary when a load is connected using a phasor diagram neglecting impedance drops
 - safety features specified in relevant industry standards with respect to transformers and isolating transformers
 - determining circuit operating characteristics when solving problems in LV transformers
- transformer losses, efficiency and cooling, including:
 - methods used for natural and forced cooling of transformers
 - power losses which occur in a transformer
 - tests which allow the power losses of a transformer to be determined

- relationship between transformer cooling and rating
- transformer voltage regulation including:
 - reasons for voltage variation in the output of a transformer
 - voltage regulation as applicable to a transformer
- percentage impedance, including:
 - as applied to transformers
 - techniques for determining percentage impedance of a transformer by relevant calculation
- parallel operation of transformers, including:
 - need for parallel operation of transformers
 - techniques for connecting in parallel to supply a single load (loading on transformers operating in parallel)
 - conditions/restrictions required before two transformers can be connected in parallel
 - the consequences/effect of an incorrect connection
- relevant manufacturer specifications.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so, where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEEL0047 Identify, shut down and restart systems with alternate supplies

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to identify, shut down and restart systems with alternate supplies.

It includes identifying the system configuration, working safely with electricity generation systems and inverters, identifying hazards and controlling the associated risks, isolation and testing for de-energisation, reinstating the system after isolation, and completing relevant documentation.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work on systems with alternate supplies

2 Identify and isolate alternate supplies

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Nature of the installation is obtained from appropriate written documentation, electrical drawings and/or relevant person/s to determine the scope of work
- 1.2** WHS/OHS workplace procedures are obtained, interpreted and applied
- 1.3** Hazards are identified, risks are assessed, and control measures are implemented
- 1.4** Tools, equipment and circuit testing devices are obtained and checked for correct operation and safety in accordance with workplace procedures
- 1.5** Work supervisor is consulted to ensure work is coordinated effectively with others
- 2.1** Labelling indicating generation system/s connected on site is located, interpreted and checked against electrical diagrams

- 2.2 Switchboard, circuits and known supply are identified
 - 2.3 Site procedures for isolation and shutdown are obtained and interpreted
 - 2.4 Circuit to be isolated is identified and tested
 - 2.5 Shutdown procedures are completed in accordance with industry standards and workplace procedures
 - 2.6 Isolation of energy sources is completed and proved in accordance with workplace procedures, industry standards and regulatory requirements
 - 2.7 Systems are inspected and tested for compliance with industry and regulatory standards
 - 2.8 Battery storage system integrity is checked in accordance with industry standards and regulatory requirements
 - 2.9 System is re-instated after isolation
- 3 **Complete work and document records**
 - 3.1 WHS/OHS work completion risk control measures and procedures are followed
 - 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
 - 3.3 Work completion is documented, electrical drawings are updated, and relevant personnel are notified in accordance with workplace procedures and regulatory requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Identifying, shutting down and restarting

- one with an energy source that is still

systems must include electricity generation systems and electricity converters relevant to the installation type, including:

- available once turned off; and
- one inverter energy system
- AND, at least two of the following:
 - grid-connected inverter systems
 - photovoltaic (PV) array systems
 - micro-inverters
 - engine-driven generating sets
 - stand-alone power systems
 - battery systems

Unit Mapping Information

No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEL0047 Identify, shut down and restart systems with alternate supplies

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) workplace procedures
- identifying and assessing hazards and risks, including hazards based on supply system labelling, and implementing control measures
- obtaining and checking required tools, equipment and testing devices
- reading and interpreting electrical documentation, labelling and drawings
- identifying alternative supply arrangements and configurations
- applying safe shutdown procedures
- isolating energy sources in accordance with workplace procedures and regulatory requirements, including:
 - applying safe isolation practices
 - identifying correct isolation device
 - identifying and checking operation of control device/s
 - identifying live conductors
 - identifying known source of electromotive force (EMF) for testing purposes
 - correctly using a voltage tester
 - isolating multiple supplies, where required
 - isolating under no loads
 - ensuring all energy sources are isolated
 - de-energising charging sources, including:
 - solar charge controllers
 - battery chargers
 - proving systems are isolated

- tagging-out all supplies
- ensuring all installation work complies with relevant industry standards and legislation to which the selection, installation and control equipment of each type of system must comply
- checking battery storage system integrity is in accordance with industry standards and regulatory and manufacturer requirements, including ventilation, correct isolation devices and installation position
- safely re-instating generation system to operational mode according to site documentation and manufacturer instructions
- completing required documentation and forwarding to relevant parties.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- working safely with alternate supplies, including identifying hazards and controlling risks in compliance with regulatory and enterprise requirements
- main types, arrangements and configurations of alternative supplies (generating system), including renewable and non-renewable generating systems
- fundamental requirements, including:
 - connection methods of alternative supplies
 - local supply authority requirements
 - characteristics and operation of uninterruptable power supplies (UPS)
 - direct current (d.c.) polarity requirements, including switching, correct rating of d.c. switches and protection devices
 - importance of replacing components like-for-like
 - inverter principles, including operation and interaction with the installation, anti-islanding and islanding requirements and testing requirements
 - identification and labelling requirements and their purpose
 - arrangement for connecting an alternative supply to an installation, including automatic and manual changeover switches, multiple main switches and switchboard wiring
 - earthing arrangements, including equipotential bonding, and earthing methods and requirements for stand-alone systems and generators
- safe isolation of the generator/energy source, including:
 - anti-islanding
 - auto changeover/auto start
 - backup – external power supply (EPS)/UPS mode or backup mode
 - earth fault alarm
 - voltage rise
 - voltage parameters AS/NZS 4777 Grid connection of energy systems via inverters
 - no loads
 - deenergising charging sources such as solar charge controllers, and battery chargers

- AS/NZ 4836 Safe working on or near low-voltage electrical installations and equipment
- labelling and identification of alternate supply systems
- battery storage systems, including regulatory and manufacturer requirements
- relevant industry standards to which the selection, installation and control equipment of each type of system must comply, including:
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules) relating to the requirements for electricity generation systems installation and electricity converters
 - AS/NZS 4777(series) Grid connection of energy systems via inverters
 - AS/NZS 5033 Installation and safety requirements for photovoltaic (PV) arrays
 - AS/NZS 3010 Electrical installations - generating sets
 - AS/NZS 4509 (series) Stand-alone power systems
 - AS 3011 Electrical installations - Secondary batteries installed in buildings
 - AS/NZS 5139 Electrical installations - Safety of battery systems for use with power conversion equipment
- site and regulatory documentation requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEIC0022 Install instrumentation and control apparatus and associated equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install instrumentation and control apparatus and associated equipment.

It includes preparing and installing instrumentation and control apparatus and associated equipment, as well as completing and reporting installation activities.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, is required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Identify instrumentation, control apparatus and associated equipment

- 1.1** WHS/OHS requirements and workplace procedures are identified and applied
- 1.2** Hazards are identified, risks are assessed and control measures implemented
- 1.3** Safety hazards not previously identified are reported on job safety assessment and advice on risk control measures are implemented
- 1.4** Installation of apparatus is prepared in consultation with relevant person/s and scheduled
- 1.5** Nature and location of work is determined from documentation and/or relevant person/s to determine scope of work
- 1.6** Location of instrumentation, control apparatus and associated equipment is planned within constraints of building structure, significant and regulations
- 1.7** Advice is sought from relevant person/s to ensure work is coordinated with others in accordance with workplace procedures
- 1.8** Materials needed for installation work are obtained in accordance with workplace procedures and checked against job requirements
- 1.9** Tools, equipment and testing devices needed for work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.10** Preparatory work is checked by supervisor to ensure no damage has occurred and work complies with job requirements

2 Install instrumentation, control apparatus and associated equipment

- 2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed

- 2.2 Need to test or measure live electrical components is determined in accordance with WHS/OHS regulatory requirements and workplace procedures
- 2.3 Circuits/machines/plant are checked and isolated in accordance with workplace procedures
- 2.4 Instrumentation, control apparatus and associated equipment are installed with sufficient excess to adjust and maintain terminations in accordance with technical standards, manufacturer specifications and job requirements
- 2.5 Wiring and tubing is terminated at instrumentation, control apparatus and associated equipment in accordance with manufacturer specifications, functional and regulatory requirements
- 2.6 Unplanned situations are discussed with relevant person/s and documented in accordance with workplace procedures
- 2.7 Unplanned situations are dealt with safely and with approval of authorised person/s in accordance with workplace procedures
- 2.8 Regular quality checks of installed apparatus are undertaken in accordance with workplace procedures
- 2.9 Apparatus installation is performed without waste of materials, damage to apparatus, circuits, surrounding environment or services using sustainable energy principles and practices
- 3 **Complete and report installation activities**
 - 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
 - 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
 - 3.3 Final checks are made to installed apparatus to ensure it meets job requirements
 - 3.4 'As-installed' apparatus and associated equipment are documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Instrumentation and control apparatus and associated equipment must include at least four of the following:

- pressure measurement apparatus and systems
- temperature measurement apparatus and systems
- level/density measurement apparatus and systems
- flow measurement apparatus and systems
- chemical measurement apparatus and systems

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI108A Install instrumentation and control apparatus and associated equipment.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0022 Install instrumentation and control apparatus and associated equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- applying sustainable energy principles and practices
- checking circuits/machines/plant are isolated
- cleaning and making safe worksite
- completing and reporting installation activities
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- identifying and installing instrumentation, control apparatus and associated equipment
- locating and installing instrumentation, control apparatus and associated equipment
- obtaining relevant materials and checking against job requirements
- obtaining tools, equipment and testing devices
- terminating wiring and tubing
- undertaking regular quality checks in accordance with relevant industry standards.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- instrumentation and control equipment installation requirements and techniques
- live electrical components
- quality checks
- regulatory requirements, including:
 - equipment specification
 - manufacturer s installation instructions
 - system specifications
 - communication/signal cabling installation requirements

- power wiring requirements
- initial set-up procedures
- relevant job safety assessments or risk mitigation processes, including risk control measures
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices
- wiring and tubing terminations.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEIC0023 Install instrumentation and control cabling and tubing

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install instrumentation and control cabling and tubing.

It includes identifying and installing cabling, tubing and accessories. It also includes completing and reporting installation activities, routing cables and tubing to specified locations, terminating cables and tubing, and connecting wiring at accessories, instruments and control apparatus.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, is required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify cabling and tubing

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures are identified and applied
- 1.2** Hazards are identified, risks are assessed and control measures implemented
- 1.3** Safety hazards not previously identified are reported on job safety assessment and advice on risk control measures are implemented
- 1.4** Installation of cabling and tubing is prepared in consultation with relevant person/s and scheduled in accordance with workplace procedures
- 1.5** Nature and location of work is determined from documentation and/or relevant person/s to determine scope of work
- 1.6** Cable and tube routes are planned within constraints of building, plant structure, significants and regulations
- 1.7** Advice is sought from appropriate person/s to ensure work is coordinated effectively with others
- 1.8** Material needed for installation work is obtained in accordance with workplace procedures and checked against job requirements
- 1.9** Tools, equipment and testing devices needed for work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.10** Work is checked by supervisor to ensure and work complies with job requirements

2 Install cabling, tubing and accessories

- 2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed
- 2.2** Plant/machines/equipment are checked and isolated in accordance with workplace procedures
- 2.3** Cabling, tubing and accessories are installed to comply with technical standards, job specifications and work

requirements with sufficient excess to affect terminations

- 2.4 Accessories are installed in required locations within acceptable tolerances
 - 2.5 Cables and conductors are terminated at accessories in accordance with manufacturer specifications and regulatory requirements
 - 2.6 Tubing is terminated at accessories in accordance with manufacturer specifications and regulatory requirements
 - 2.7 Methods for dealing with unplanned situations are discussed with relevant person/s and documented
 - 2.8 Unplanned situations are responded to in accordance with workplace procedures and approval of authorised person/s
 - 2.9 Ongoing quality checks of installed wiring is undertaken in accordance with workplace procedures
 - 2.10 Cabling and tubing installations are performed using sustainable energy principles without wasting materials and energy, damaging apparatus or surrounding environment in accordance with workplace procedures
- 3 Complete and report installation activities**
- 3.1 WHS/OHS work completion risk control measures and procedures are followed
 - 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
 - 3.3 Final checks are made to ensure installed wiring conforms to requirements
 - 3.4 'As-installed' cables, tubes and accessories are documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

- Wiring and tubing must include the following:
- at least three wiring systems:
 - armoured cable
 - fire performance cables
 - thermoplastic insulated (TPI) cable
 - thermoplastic sheathed (TPS) cable
 - unshielded twisted pair (UTP), foiled twisted pair (FTP), shielded twisted pair (STP) and coaxial communications cables
 - at least two tubing types:
 - low pressure metallic and non-metallic tubing
 - high pressure tubing

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI107A Install instrumentation and control cabling and tubing.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0023 Install instrumentation and control cabling and tubing

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- acquiring relevant materials, tools, equipment and testing devices
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including identifying risk control measures
- applying sustainable energy principles and practices
- checking installed wiring is compliant
- communicating and dealing with other person/s when scheduling and planning work
- completing and reporting installation activities
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- identifying and installing cabling, tubing and accessories
- placing and securing accessories in accordance to specified drawings
- routing, placing and securing cables and tubing to comply with requirements
- terminating cables and tubing to comply with requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- instrumentation cable types and terminations, including:
 - cable specifications
 - cable applications
 - cable preparation
 - cable termination
 - connection hardware
- instrumentation pneumatic/hydraulic control tubing/piping, including:
 - control tubing/piping

- pneumatic/hydraulic terms
- cutting pipe tubing/piping
- bending, shaping/setting pipe and tubing
- joining connecting/terminating tubing/ piping
- instrumentation air supply maintenance
- job safety assessments or risk mitigation processes, including risk control measures
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to use instrumentation drawings, specifications, industry standards and equipment manuals relevant to install, maintain and fault find process controls.

Process controls are a system dealing with mechanisms for maintaining the output of a specific process within a desired range. A process is predictable, stable and consistently operating at a target level of performance.

It includes applying principles of process control embodied in drawings, industry standards, specifications and equipment manuals; matching equipment with specifications for a given function; and locating and determining connections required between pneumatic, hydraulic and electrical equipment from instrumentation drawings and specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Identify instrumentation drawings, specifications, industry standards and equipment manuals

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS), risk control measures and workplace procedures are followed
- 1.2** Need for instrumentation drawings, specifications, industry standards or equipment manuals is determined for the work to be undertaken
- 1.3** Instrumentation drawings, specifications, industry standards or equipment manuals required for the work to be undertaken are obtained in accordance with workplace procedures

2 Use instrumentation drawings, specifications, industry standards and equipment manuals

- 2.1** Instrumentation drawings, specifications, industry standards and/or equipment manuals are selected appropriate to the work being undertaken
- 2.2** Instrumentation drawings, specifications, industry standards and equipment manuals are interpreted using information from process controls, instrumentation drawing layouts, conventions and symbols
- 2.3** Dimensions are extracted and applied from drawings and diagrams for application to work being undertaken
- 2.4** Location of equipment is determined from instrumentation drawings and specifications
- 2.5** Connections between pneumatic, hydraulic and electrical equipment are determined from instrumentation drawings and specifications
- 2.6** Equipment manuals are reviewed to ascertain content, format and located information are relevant to the work to be undertaken

3 Convey instrumentation information using drawings and diagrams

- 3.1** Drawing conventions are used in freehand drawing layouts to convey instrumentation information and ideas to others involved in the work to be undertaken
- 3.2** Instrumentation drawing conventions are used to neatly correct freehand original job drawing to show final 'as-installed' arrangement
- 3.3** Corrected drawings are forwarded to appropriate

person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Instrumentation assembly, installation, fault finding, maintenance or development work functions for least two different process control systems must include:

- instrumentation drawings
- specification industry standards
- equipment manuals

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI101A Use instrumentation drawings, specifications, standards and equipment manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including applying risk control measures
- conveying instrumentation information and ideas using drawings and diagrams
- determining connections between pneumatic, hydraulic and electrical equipment
- determining location of equipment from instrumentation drawings and specifications
- identifying and using instrumentation drawings, specifications, industry standards and equipment manuals
- interpreting instrumentation drawings, specifications, industry standards and equipment manuals for process controls and instrumentation drawing layouts, conventions and symbols
- sketching of instrumentation and control drawings
- using instrumentation drawings, diagrams and manuals
- using workplace conventions in freehand drawings.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- industrial instrumentation. including:
 - introduction to the purposes of measurement in industrial processes
 - instrument control loops
 - types of measurement in these processes
 - local and remote measurement
 - measurement signal methods
 - signal transmissions electrical standards
 - signal transmissions pneumatic standards
 - flow, temperature, pressure and other appropriate measurements
 - identification and purpose of instruments measuring processes directly and those

- measuring indirectly
- instrumentation and control components: sensors, transducers, converters and transmitters
- instrument standards, including:
 - instrumentation standards
 - relationship between standards
 - using standards
 - fluids in process piping colour coding
 - instruments symbols
- instrumentation terminology and International System of Units (SI), including:
 - SI base units
 - SI derived units
 - scientific and engineering notation
 - SI prefixes
 - instrumentation metric units
 - non-standard SI units - kg/cm², and so on
 - conversion of units
 - instrumentation terminology:
 - span
 - range
 - accuracy
 - precision
 - errors
 - zero
 - repeatability
 - sensitivity
 - hysteresis
- calibration of link and lever instruments, including:
 - principles of levers and links and calibration of indicator recorder instrument
 - calibration terms
 - calibrate a link and lever instrument
 - interpret calibration data so as to identify the types of error displayed by an instrument and whether the instrument is within its specified accuracy
 - interpretation of graphs and tables associated with instrumentation
- instrumentation safe working practices, including:
 - identification of instrumentation and control hazards
 - risk control measures for instrumentation work
 - risk assessment
- instrumentation drawings, diagrams and manuals, including:
 - electrotechnology drawing symbols for instrumentation and control (electrical/electronic circuits, instrument circuits/diagrams, programmable logic controller (PLC) diagrams,

- pneumatic and hydraulic)
- standards used in instrumentation drawings (ISA, ASME, Australian Standards (AS), and SAMA)
- drawings used in instrumentation - schematic, single line, wiring, PLC diagrams, process flow diagrams - brief instrument information, process loop diagrams - details, terminals and types of instruments
- manufacturers data sheets, manuals, specifications and test procedures - instrumentation manuals, catalogues and drawings, including:
 - interpretation of the specifications contained within instrumentation manuals, catalogues and drawings
 - interpretation of the test procedures contained within instrumentation manuals, catalogues and drawings
 - comparison of data presented in different forms for the same equipment.
 - identification of data relevant to instrumentation from a range of publicity material
 - extraction of information such as calibration, testing or installation procedures from manuals, specification sheets and drawings
- quantity take-offs and parts lists, including:
 - part numbers for components, assemblies and equipment
 - parts list for a specified project or installation from manuals, catalogues, specifications and drawings
 - list of equipment, required to undertake a specified project or installation, from manuals, catalogues, specifications and drawings
 - identification and extraction of a part number for an actual sample component or part from a manual, catalogue, specification and/or drawing
- sketching of instrumentation and control drawings, including:
 - sketching a schematic circuit diagram from a given circuit board layout diagram, wiring or installation drawing and installation or modification of a specified project using information contained within manuals
 - sketching a part or equipment layout needed to perform a specified task, such as installation or modification, from given manuals, catalogues, specifications and drawings
- principles of process control
- relevant instrument industry standards including fluids in process piping colour coding and instrument symbols
- relevant manufacturer specifications
- relevant safe work statements (SWMS)/job safety assessments or risk mitigation processes, including risk control measures and instrumentation safe working practices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, including catalogues, drawings, manufacturer's data sheets, manuals, specifications and test procedures
- instrumentation manuals, catalogues and drawings
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEPMNT302 Install and maintain industrial pipe work

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake work associated with the installation, maintenance and fabrication of industrial pipe work, which may also involve fault finding and repairs.

Industrial piping is used to convey fluids, liquids and gases from one location to another. Pipe fabrication is the process of making and assembling industrial pipe work to suit each power generation facility's requirements.

Competency in this unit requires the ability to plan work, fabricate and install industrial pipe work, maintain industrial pipe work and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit may require a licence or training permit to practice in the workplace where work is carried out on gas and electrical installations. Additional conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Occupational Health and Safety (OHS)/Work, Health and Safety (WHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with the work procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace
- 1.7** Potential hazards are identified, and risk control measures, are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Fabricate and install pipe

- 2.1** Isolations are confirmed, where appropriate, in

work	accordance with workplace procedures
	2.2 Pipe runs are identified, calculations performed and sketches made of planned installation in accordance with workplace procedures
	2.3 Pipe work is fabricated, using appropriate techniques and equipment, in accordance with workplace procedures
	2.4 Pipe work is levelled and aligned, and installed or coupled, in accordance with the workplace procedures
3 Maintain industrial pipework	
	3.1 Pipe work found to be faulty is repaired and replaced to conform to site requirements or manufacturers' specifications, in accordance with workplace procedures
	3.2 Pipe work modifications and alterations are undertaken, in accordance with workplace procedures, site requirements and manufacturers' specifications
	3.3 Machinery and/or plant is returned to service, and pipe work is monitored and adjusted, in accordance with workplace procedures
4 Complete work	
	4.1 Work is completed, and appropriate personnel notified, in accordance with workplace procedures
	4.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	4.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	4.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT302B Install and maintain industrial pipe work.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT302 Install and maintain industrial pipe work

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- analysing data using analysis techniques
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining work to permit requirements
- dismantling and reassembling industrial pipework using approved techniques
- fabricating and installing industrial pipe work using installation and fabrication techniques and procedures maintain industrial pipe work using maintenance techniques and procedures
- fabricating and installing industrial pipework
- implementing legislation, relevant industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- interpreting technical drawings and data
- planning for installation and maintenance pipe work
- recognising worn or damaged components
- selecting materials and components
- undertaking measurements with measuring equipment
- using tools
- utilising testing techniques
- working with pipe levelling and alignment techniques

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data analysis techniques
- isolations
- legislation, industry standards, codes of practices and regulations
- maintenance of industrial pipework
- manufacturers' specifications and manuals
- materials and components
- measuring equipment
- permit to work system
- pipe levelling and alignment techniques
- pipe work fabrication and installation techniques
- technical drawings and plans
- techniques for dismantling and reassembling industrial pipes recognition of worn or damaged components
- testing techniques
- tools
- types and characteristics of industrial pipe work
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT303 Maintain mechanical valves

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake fault finding, diagnosis, repair and/or overhaul of mechanical valves, excluding any associated servo or actuating unit.

Fault finding is the process of undertaking an investigation into the cause of a mechanical valve malfunction and then performing repairs to ensure optimal performance of equipment and plant.

Competency in this unit requires the ability to plan work, remove mechanical valves for maintenance, perform mechanical valve maintenance, replace and/or install valves and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit may require a licence or training permit to practice in the workplace where work is carried out on gas and electrical installations. Additional conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources for work activities are obtained and inspected for compliance with the job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with the work procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Remove mechanical valves

- 2.1** Isolations are confirmed, where appropriate, in

for maintenance

accordance with workplace procedures

2.2 Mechanical valve is disconnected, in accordance with workplace procedures

2.3 Mechanical valve is removed, in a manner which will assist in replacement, in accordance with the workplace procedures

2.4 Mechanical valve is inspected for abnormalities, in accordance with the workplace procedures

3 Perform mechanical valve maintenance

3.1 Maintenance is performed, in accordance with manufacturers' specification and workplace procedures

3.2 Mechanical valve is dismantled, clearly marked for identification, and relevant sketches are drawn, in accordance with workplace procedures

3.3 Components are prepared for reassembly, in accordance with manufacturers' drawings and/or manuals and workplace procedures

3.4 New components are inspected, in accordance with workplace procedures, to ensure compliance with manufacturers' specification

3.5 Dimensional inspection is performed with precision measuring devices, in accordance with workplace procedures, to ensure compliance with manufacturers' specification and

3.6 Components are reassembled for testing, in accordance with manufacturers' specification and workplace procedures

3.7 Modifications and/or alterations are undertaken, in accordance with manufacturers' specification and workplace procedures

3.8 Components are levelled, aligned, coupled and connected, in accordance with manufacturers' specifications and workplace procedures

3.9 Valves are pressure tested, monitored and adjusted, if required, in accordance with manufacturers' specifications and workplace procedures

4 Replace or install

4.1 Equipment is prepared for valve replacement, in

mechanical valves	accordance with workplace procedures
4.2	Mechanical valve is replaced, in accordance with manufacturers' specification and workplace procedures
4.3	Mechanical valve is connected, in accordance with manufacturers' specification and workplace procedures
4.4	Final inspection is completed, in accordance with workplace procedures
5 Complete work	
5.1	Work is completed, and appropriate personnel are notified, in accordance with workplace procedures
5.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
5.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
5.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT303B Maintain mechanical valves.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT303 Maintain mechanical valves

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining work to permit requirements
- dismantling and reassembling mechanical valves
- implementing legislation, industry standards, codes of practice and regulations
- interpreting technical drawings, plans, manufacturers' specifications and manuals
- levelling and aligning valves using approved techniques
- manufacturing and installing seals and gaskets
- performing valve maintenance using maintenance techniques and procedures
- planning for mechanical valve maintenance work
- recognising worn or damaged components
- removing valves for maintenance using removal techniques and procedures
- replacing and installing valves using installation techniques and procedures
- selecting materials and components
- testing mechanical valves and equipment
- undertaking evaluations using data analysis techniques
- working with tools and precision measuring equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data analysis techniques
- dismantling and reassembling techniques
- isolations
- manufacture and installation of seals and gaskets
- manufacturers' specifications and manuals legislation, industry standards, codes of practice and regulations
- materials and components
- measurement equipment
- permit to work system
- recognition of worn or damaged components
- technical drawings and plans
- test techniques
- types of mechanical valves and characteristics
- typical arrangements of power production plant
- use of tools
- valve installation techniques
- valve levelling and alignment techniques
- WHS/OHS legislated requirements including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- workplace documentation,
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace

conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT304 Maintain mechanical pumps

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the installation and maintenance of mechanical pumps (no more than basic alignment). Pump maintenance, including installation, is undertaken to ensure optimal performance of equipment and plant in a power generation facility.

Competency in this unit requires the ability to plan work, remove mechanical pumps for maintenance, maintain mechanical pumps, replace and/or install mechanical pumps and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit may require a licence or training permit to practice in the workplace where work is carried out on gas and electrical installations. Additional conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Remove mechanical

- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures and site

pumps for maintenance	requirements
	2.2 Mechanical pump is disconnected, in accordance with the workplace procedures
	2.3 Mechanical pump is removed, in a manner which will assist in replacement, in accordance with workplace procedures
	2.4 Mechanical pump is inspected for abnormalities, in accordance with workplace procedures
3 Maintain mechanical pumps	3.1 Maintenance is performed, in accordance with manufacturers' specification and workplace procedures
	3.2 Mechanical pump is dismantled, in accordance with manufacturers' specification and workplace procedures
	3.3 Sketches are made, data is noted and components are marked for identification or reassembly, in accordance with workplace procedures
	3.4 New components are inspected for compliance, in accordance with workplace procedures and manufacturers' specifications
	3.5 Dimensional inspection is performed, with precision measuring devices, in accordance with workplace procedures, to ensure compliance with manufacturers' specifications and results are recorded
	3.6 Mechanical pump is reassembled, applying appropriate principles and techniques, in accordance with workplace procedures and manufacturers' specifications
	3.7 Modifications and/or alterations to mechanical pump are undertaken, in accordance with workplace procedures
4 Replace or install mechanical pumps	4.1 Equipment is prepared for pump replacement, in accordance with workplace procedures
	4.2 Mechanical pump is replaced, in accordance with workplace procedures and manufacturers' specification
	4.3 Mechanical pump is levelled, aligned, coupled and connected, in accordance with workplace procedures
	4.4 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications

- 4.5 Machinery and/or plant, including mechanical pump, are given a test run, and are monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specifications
- 5 **Complete work**
 - 5.1 Work is completed, and appropriate personnel are notified, in accordance with workplace procedures
 - 5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 5.3 Tools and equipment are maintained and stored, in accordance with workplace procedures
 - 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT304B Maintain mechanical pumps.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT304 Maintain mechanical pumps

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- applying coupling levelling and alignment techniques
- communicating with personnel
- completing work in line with schedules
- determining data analysis techniques and tools
- dismantling and reassembling techniques
- identifying resources and materials
- implementing legislation, industry standards, codes of practice and regulations
- interpreting technical drawings, manufactures' specifications and manuals
- manufacturing and installing seals and gaskets
- recognising worn or damaged components
- removing and maintaining mechanical pumps
- replacing or installing mechanical pumps
- selecting materials and components
- using precision measuring equipment
- using removal and maintenance techniques and procedures
- using tools including specialised tools and jigs
- utilising permit to work system
- working with defined tolerances

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data analysis techniques and tools
- defined tolerances
- dismantle and reassemble techniques
- legislation, industry standards, codes of practice and regulations
- maintenance of mechanical pumps
- manufacture and installation of seals and gaskets
- manufacturers' specifications and manuals
- materials and components
- permit to work system
- precision measuring equipment
- resources and materials
- technical drawings
- techniques for coupling, levelling and alignment
- tools including specialised tools and jigs
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation,
- workplace policies and procedures
- worn or damaged components

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations

- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT305 Maintain industrial fans

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to maintain and/or overhaul industrial fans. It may involve fault finding, diagnosis, repair and may require the removal and replacement of rotating elements with modulating controls.

Industrial fans typically provide a large flow of air or gas to power or cool a power generation facility's plant and equipment. The diagnosis and repair of faults requires the systematic investigation of any industrial fan malfunction.

Competency in this unit requires the ability to plan work, remove industrial fans for maintenance, maintain industrial fans, replace and/or install industrial fans and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Occupational Health and Safety(OHS)/Work, Health and Safety (WHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources for work activities are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with the workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Remove industrial fan for

- 2.1** Isolations are confirmed, where appropriate, in

maintenance	accordance with workplace procedures
	2.2 Industrial fans are disconnected, in accordance with workplace procedures
	2.3 Industrial fans are removed, in a manner which will assist in replacement, in accordance with workplace procedures
	2.4 Industrial fans are inspected for abnormalities, in accordance with workplace procedures
3 Maintain industrial fans	3.1 Maintenance is performed on industrial fans, in accordance with manufacturers' specification and workplace procedures
	3.2 Components are disassembled or assembled and preliminary balance of equipment is obtained, maintained and adjusted by assembling components of an appropriate weight, in accordance with workplace procedures and manufacturers' specification
	3.3 Sketches are made, data noted and components are marked for identification or reassembly, in accordance with workplace procedures
	3.4 New components are obtained and inspected for compliance with manufacturers' specification, in accordance with workplace procedures
	3.5 Dimensional inspection is performed with precision measuring devices to ensure compliance with manufacturers' specifications and results are recorded, in accordance with workplace procedures
	3.6 Industrial fans are reassembled, applying appropriate principles and techniques, in accordance with workplace procedures and manufacturers' specifications
	3.7 Modifications or alterations to industrial fans are undertaken, in accordance with workplace procedures
4 Replace or install industrial fans	4.1 Equipment is prepared for industrial fan replacement, in accordance with workplace procedures
	4.2 Industrial fans are replaced, in accordance with workplace procedures and manufacturers' specification
	4.3 Industrial fans are levelled, aligned, coupled and

connected, in accordance with workplace procedures

4.4 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specification

4.5 Machinery, plant and industrial fans are given a test run, monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specification

5 Complete work

5.1 Work is completed, and appropriate personnel are notified, in accordance with workplace procedures

5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures

5.3 Tools and equipment are maintained and stored, in accordance with workplace procedures

5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT305B Maintain industrial fans.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT305 Maintain industrial fans

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work using completing work procedures
- determining installation techniques and procedures
- dismantling and assembling components
- identifying and using measuring equipment
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- maintaining industrial fans
- planning and preparing for industrial fan maintenance work
- recognising worn or damaged components
- removing industrial fan for maintenance
- replacing and installing industrial fans
- selecting materials and components
- using removal and balancing techniques
- using tools
- utilising permit to work system
- working with maintenance techniques and procedures including coupling, levelling, aligning and working to defined tolerances

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- defined tolerances
- dismantle and reassemble techniques
- legislation, industry standards, codes of practice and regulations
- maintain industrial fans
- manufacturers' specifications and manuals
- measurement equipment
- permit to work system
- recognition of worn or damaged components
- selection of materials and components
- techniques for coupling, levelling and alignment
- tool use
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.
- relevant and appropriate materials, tools, equipment and personal protective equipment

currently used in industry

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT307 Maintain industrial screens, strainers and filters

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake fault finding, diagnosis, repair and/or overhaul of industrial screens, strainers and filters.

Industrial screens, strainers and filters are used in the filtration, separation, extraction and absorption of liquids or solids in a power generation facility's machinery and plant. The diagnosis and repair of faults requires the systematic investigation of any industrial screen, strainer and filter malfunction.

Competency in this unit requires the ability to plan work, remove industrial screens, strainers and filters for maintenance, maintain industrial screens, strainers and filters, replace and/or install industrial screens, strainers and filters and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Remove screens, strainers and filters for

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources for work activities are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

- 2.1** Isolations are confirmed, where appropriate, in

maintenance	accordance with workplace procedures
	2.2 Screens, strainers and filters are disconnected, in accordance with workplace procedures
	2.3 Screens, strainers and filters are removed, in a manner which will assist in replacement, in accordance with workplace procedures
	2.4 Screens, strainers and filters are inspected for abnormalities, in accordance with workplace procedures
3 Maintain screens, strainers and filters	
	3.1 Equipment isolation and depressurisation is confirmed visually and manually, as required, in accordance with workplace procedures
	3.2 Plant and/or equipment including screen, strainer and filter components, assemblies and/or subassemblies, are identified and prepared for maintenance, in accordance with workplace procedures
	3.3 Equipment, including screens, strainers and filters are removed, cleaned and marked for identification, in accordance with workplace procedures
	3.4 Faulty items are repaired or overhauled, using appropriate principles, techniques and industry standards, in accordance with the workplace procedures
	3.5 Replacement items for installation are selected and inspected, in accordance with manufacturers' specification and workplace procedures
	3.6 Modifications or alterations outside of the manufacturers' specification are approved by appropriate personnel, in accordance with workplace procedures
	3.7 Component failures are identified and probable causes are reported, in accordance with workplace procedures
	3.8 Components or subassemblies are refitted, in accordance with workplace procedures and manufacturers' specification
	3.9 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specification
4 Replace screens, strainers and filters	
	4.1 Equipment and plant is prepared for screens, strainers and filter replacements, in accordance with workplace

procedures

- 4.2 Screens, strainers and filters are replaced, in accordance with workplace procedures and manufacturers' specification
- 4.3 Screens, strainers and filters are levelled, aligned and coupled, in accordance with workplace procedures
- 4.4 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specification
- 4.5 Equipment and plant including screens, strainers and filters, are given a test run and are monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specification

5 Complete work

- 5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT307B Maintain industrial screens, strainers and filters.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT307 Maintain industrial screens, strainers and filters

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- dismantling and assembling components
- identifying permit to work system requirements
- interpreting manufacturers' specifications and manuals
- maintaining industrial screens, strainers and filters
- planning for industrial screen, strainer and filter maintenance work
- reading technical drawings and data
- removing industrial screens, strainers and filters for maintenance
- replacing and installing screens, strainers and filters
- using removal, maintenance and installing techniques and procedures
- utilising valve levelling and alignment techniques
- working with measuring equipment and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- how to dismantle and assemble components

- installation and maintenance techniques
- legislation, industry standards, codes of practice and regulations
- levelling and alignment techniques
- maintenance of industrial screens, strainers and filters
- manufacturers' specifications and manuals
- measuring equipment
- permit to work system
- screen and filter types and characteristics
- technical drawings and data use
- tool use
- valve levelling and alignment techniques
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT308 Maintain conveyors and associated equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake fault finding, diagnosis, adjustments, exchange of rollers and preparations for belt splicing and/or repairs of conveyors and associated equipment.

A conveyor system is a continuous moving band of fabric, rubber or metal used for transporting bulk materials from one place to another in a power generation facility.

Competency in this unit requires the ability to plan work, remove associated equipment to facilitate maintenance, maintain conveyors and/or associated equipment, replace and/or install conveyors and/or associated equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Remove associated equipment to facilitate

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources for work activities are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures
- 2.1** Faulty components and parts of conveyor system are identified and isolations are confirmed, where

maintenance	appropriate, in accordance with workplace procedures
	2.2 Associated equipment of conveyor system is disconnected, in accordance with the workplace procedures
	2.3 Associated equipment of conveyor system is removed, in a manner which will assist in replacement, in accordance with the workplace procedures
	2.4 Conveyors and associated equipment are inspected for abnormalities, in accordance with workplace procedures
3 Maintain conveyors or associated equipment	
	3.1 Belt tensioning equipment is released and secured, to facilitate maintenance, in accordance with workplace procedures
	3.2 Sketches are made, data is noted and components are marked for identification or reassembly, in accordance with manufacturers' specification and workplace procedures
	3.3 Modifications or alterations outside of manufacturers' specification are approved, in accordance with workplace procedures
	3.4 New components are installed, and inspected for compliance with job specification, and are prepared for reassembly, in accordance with workplace procedures
	3.5 Dimensional inspection is performed, in accordance with workplace procedures, using precision measuring devices to determine compliance
	3.6 Conveyors are levelled, aligned and tensioned, in accordance with workplace procedures and site requirements
4 Replace or install conveyors or associated equipment	
	4.1 Faulty components and parts are identified, and site is prepared for conveyors and associated equipment to be replaced, in accordance with workplace procedures
	4.2 Conveyors and associated equipment are replaced, in accordance with workplace procedures and manufacturers' specification
	4.3 Conveyors and associated equipment are levelled, aligned and coupled, in accordance with workplace procedures

- 4.4 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
 - 4.5 Conveyors and associated equipment are given a test run, monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specifications
- 5 **Complete work**
 - 5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT308B Maintain conveyors and associated equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT308 Maintain conveyors and associated equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per schedule requirements
- dismantling, exchanging and reassembling components and parts
- identifying and using measuring equipment
- interpreting manufacturers' specifications and manuals
- maintaining conveyors or associated equipment
- performing removal, maintenance, installing, valve levelling and alignment techniques and procedures
- planning for conveyor and associated equipment maintenance work
- removing conveyors and associated equipment to facilitate maintenance
- replacing and installing conveyors or associated equipment
- tracking, aligning and tensioning conveyors and associated equipment
- using tools
- working with permit to work system

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- dismantle, exchange and reassembly of components and parts
- identification and use of measuring equipment
- interpretation of technical drawings, manufacturers' specifications and manuals
- isolations
- legislation, industry standards, codes of practice and regulations
- level and alignment techniques
- maintenance of conveyors and associated equipment valve levelling and alignment techniques
- manufacturers' specifications and manuals
- permit to work system
- tool use
- track, align and tension conveyors and associated equipment
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT309 Maintain material feeders

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake fault finding, diagnosis, out of service inspection (internal or external), repairs and/or overhaul of material feeders.

Material feeders are used to regulate the flow of bulk materials from bins and hoppers. They can be used in conjunction with other types of material handling equipment such as conveyors in a power generation facility.

Competency in this unit requires the ability to plan work, conduct in-service testing, remove equipment to facilitate maintenance of material feeders, maintain material feeders, replace or install material feeders and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Conduct in-service testing

- 2.1** In-service tests are carried out, in accordance with

- workplace procedures
- 2.2** Faults are located using appropriate tools, equipment and testing techniques, in accordance with workplace procedures
 - 2.3** Testing and fault finding results are analysed, in accordance with workplace procedures, to establish repairs required or serviceability of material feeder
- 3 Remove equipment to facilitate maintenance**
- 3.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2** Material feeders are disconnected, in accordance with the workplace procedures
 - 3.3** Material feeders are removed, in a manner which will assist in replacement, in accordance with workplace procedures
 - 3.4** Material feeders are inspected for abnormalities, in accordance with workplace procedures
- 4 Maintain material feeders**
- 4.1** Maintenance is performed on material feeder, in accordance with workplace procedures and manufacturers' specification
 - 4.2** Components or subassemblies are dismantled, cleaned and examined, in accordance with workplace procedures, to verify tolerances and to determine whether to replace, overhaul or repair
 - 4.3** Material feeder equipment is dismantled, in a manner that will facilitate reassembly, in accordance with workplace procedures
 - 4.4** Component parts are clearly marked for identification, in accordance with workplace procedures
 - 4.5** Components are laid out, in preparation for reassembly, in accordance with workplace procedures and manufacturers' drawings or specifications
 - 4.6** New components are inspected for compliance with manufacturers' specification and are prepared for assembly, in accordance with workplace procedures
 - 4.7** Modifications or alterations are undertaken, in accordance with workplace procedures

	4.8	Components are reassembled, in accordance with workplace procedures
5 Replace or install material feeders	5.1	Equipment is prepared for material feeders to be replaced, in accordance with workplace procedures
	5.2	All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
	5.3	Material feeders are given a test run and are monitored, as required, in accordance with workplace procedures and manufacturers' specification
6 Complete work	6.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	6.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	6.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	6.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT309B Maintain material feeders.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT309 Maintain material feeders

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per schedule requirements
- conducting material feeder in-service testing using in-servicing testing procedures
- dismantling and reassembling components
- identifying and selecting resources, materials and components
- interpreting manufacturers' specifications and manuals
- interpreting technical drawings and data
- maintaining material feeders using maintenance techniques and procedures including levelling and alignment techniques and adjustments for desired material feed rate replacing and installing material feeders using removal or installation techniques and procedures
- planning for material feeder maintenance work
- removing equipment to facilitate maintenance using removal techniques
- using tools
- utilising data analysis techniques
- working with permit to work system

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- adjustments for desired material feed rate
- component dismantling and reassembling
- data analysis techniques
- feeder types and operating characteristics
- legislation, industry standards, codes of practice and regulations
- level and alignment techniques
- maintenance of material feeders
- manufacturers' specifications
- materials and components
- permit to work system
- technical drawings and data
- tools
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT310 Maintain material crushers

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake in-servicing, fault finding, diagnosis, out of service inspection, repair or overhaul of material crushers including roll and/or door assemblies.

Material crushers are used to reduce solid materials, they operate by using components such as balls, jaws or rollers that move or turn together with great force.

Competency in this unit requires the ability to plan work, conduct in-service testing of material crushers, remove material crusher's equipment to facilitate maintenance, maintain material crushers, replace and/or install material crushers and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with the workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Conduct in-service testing

- 2.1** In-service tests are carried out, in accordance with

- workplace procedures
- 2.2** Faults are located, in accordance with workplace procedures, using appropriate tools, equipment and testing techniques
 - 2.3** Testing and fault finding results are analysed, in accordance with workplace procedures, to establish repairs or ascertain serviceability of material crusher
- 3 Remove equipment to facilitate maintenance**
- 3.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
 - 3.2** Material crushers are disconnected, in accordance with workplace procedures
 - 3.3** Material crusher components are removed, in a manner which will assist in replacement, in accordance with workplace procedures
 - 3.4** Material crusher components are inspected for abnormalities, in accordance with workplace procedures
- 4 Maintain material crushers**
- 4.1** Components or subassemblies are dismantled, cleaned and examined to verify tolerances, in accordance with workplace procedures, to determine need to replace, overhaul or repair material crusher
 - 4.2** Sketches are made, data noted and components are marked for identification for reassembly or overhaul, in accordance with workplace procedures
 - 4.3** Dimensional inspection is performed, in accordance with workplace procedures, using precision measuring devices to determine compliance with relevant drawings and/or manufacturers' specification
 - 4.4** New components are inspected for compliance with manufacturers' specification and are prepared for assembly, in accordance with workplace procedures
 - 4.5** Components are weighed, measured and recorded, in accordance with workplace procedures and site requirements
 - 4.6** Components are reassembled and preliminary balance of equipment is obtained, maintained and adjusted by assembling components sequentially by appropriate

- weight, in accordance with workplace procedures
- 4.7** Plant and machinery is adjusted using appropriate techniques, in accordance with workplace procedures, manufacturers' specification and site tolerances
 - 4.8** All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
 - 4.9** Components are levelled and aligned, using appropriate tools, in accordance with workplace procedures
- 5 Replace/install material crushers**
- 5.1** Equipment is prepared for material crushers to be replaced, in accordance with workplace procedures
 - 5.2** Material crushers are replaced, in accordance with workplace procedures and manufacturers' specification
 - 5.3** Alterations or corrections are undertaken, in accordance with workplace procedures
 - 5.4** Material crushers are levelled, aligned and coupled, in accordance with workplace procedures
 - 5.5** All fastenings are torqued, in accordance with workplace procedures, manufacturers' specification and site requirements
 - 5.6** Material crushers are given a test run and are monitored, as required, in accordance with workplace procedures and manufacturers' specification
- 6 Complete work**
- 6.1** Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 6.2** Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 6.3** Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 6.4** Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT310B Maintain material crushers.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT310 Maintain material crushers

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled arrangements
- conducting material crusher in-service testing using in-service testing procedures to identify faults
- determining measuring equipment
- dismantling and reassembling components
- interpreting technical drawings, manufacturers' specifications and manuals
- maintaining material crushers using maintenance techniques and procedures
- planning for material crusher maintenance work
- removing equipment to facilitate material crusher maintenance using removal techniques
- replacing and installing material crushers using removal and installation techniques and procedures
- selecting materials and components
- testing, adjusting, replacing and overhauling crushers for desired material sizing
- using tools including specialised tools and jigs
- utilising levelling and alignment techniques
- working with permit to work system

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- component dismantling and reassembly
- crusher types and operating characteristics
- identification and use of measuring equipment
- legislation, industry standards, codes of practice and regulations
- maintenance of material crushers
- manufacturers' specifications and manuals
- materials and components
- permit to work system
- technical drawings
- tests, adjustments, replacements and overhaul requirements material crushers
- tolerances
- tools including specialised tools and jigs
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT312 Maintain industrial pressure vessels

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to maintain boiler pressure parts, pressure vessels and associated components.

Pressure vessels are designed to hold gas or liquids at a pressure substantially different from the ambient pressure, they are used in conjunction with mechanical plant and equipment in a power generation facility. Maintaining boiler pressure parts, pressure vessels and associated components will include monitoring and verifying equipment is operating efficiently.

Competency in this unit requires the ability to plan work, remove associated equipment to facilitate maintenance, dismantle and maintain pressure vessel, reassemble pressure vessel and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Remove associated equipment to facilitate

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned sequenced, prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures
- 2.1** Associated equipment isolation and depressurisation is confirmed visually and manually, as required, in

maintenance	accordance with workplace procedures
	2.2 Pressure vessel is disconnected, in accordance with the workplace procedures
	2.3 Pressure vessel's associated equipment is removed, in a manner which will assist in replacement, in accordance with workplace procedures
	2.4 Pressure vessel is inspected for abnormalities, in accordance with workplace procedures
3 Dismantle and maintain pressure vessel	
	3.1 Hazardous material is identified and arrangements are made for clearance from pressure vessel and work site, in accordance with workplace procedures and legislative requirements
	3.2 Internal and external components are systematically dismantled, marked and recorded, in accordance with workplace procedures
	3.3 Components are refurbished, catalogued and stored for reassembly, in accordance with workplace procedures and manufacturers' specifications
	3.4 Gasket and seal requirements are assessed, manufactured or obtained, in accordance with workplace procedures and manufacturers' specifications
	3.5 Vessel mountings are maintained, as required, in accordance with workplace procedures and manufacturers' specifications
	3.6 Internal piping or tubing is tested and expanded or replaced, as required, in accordance with workplace procedures and manufacturers' specifications
4 Reassemble pressure vessel	
	4.1 Internal and external components are systematically reassembled, in accordance with workplace procedures and manufacturers' specifications
	4.2 Associated equipment is aligned and replaced, in accordance with workplace procedures
	4.3 Fastenings are torqued, in accordance with manufactures' specification and workplace procedures
	4.4 Vessel is pressure tested, monitored and adjusted, if required, in accordance with workplace procedures, and

		legislative requirements
5	Complete work	
	5.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	5.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	5.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	5.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT312B Maintain industrial pressure vessels.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT312 Maintain industrial pressure vessels

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per schedules
- dismantling and reassembling components
- identifying, repairing and installing pressure system components
- interpreting manufacturers' specifications and manuals
- manufacturing and installing gaskets and seals
- operating in permit to work system
- planning for industrial pressure vessel maintenance work
- reassembling industrial pressure vessel
- removing associated equipment to facilitate maintenance using removal techniques
- dismantling and maintaining industrial pressure vessel utilising maintenance techniques and procedures
- using tools including specialised tools and jigs
- utilising installation, testing, levelling and alignment techniques
- working on pressure vessels, valves and mountings

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- component dismantling and reassembly
- industrial pressure vessels
- legislation, industry standards, codes of practice and regulations
- levelling and alignment techniques
- manufacture and installation of gaskets and seals
- manufacturers' specifications and manuals
- materials and components
- permit to work system
- pressure system characteristics
- repair and installation of pressure system components
- technical drawings
- tools including specialised tools and jigs
- typical arrangements of power production plant
- valves and mountings
- valves and pressure system components
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT314 Maintain hydro turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to maintain hydro turbines including their removal from service and the completion of overhauls.

An overhaul includes a thorough examination of the hydro turbine, with repairs or changes made, if required. This may mean taking apart the hydro turbine to examine and repair it.

Competency in this unit requires the ability to plan work, disassemble a hydro turbine, inspect a hydro turbine's components, repair a hydro turbine and/or its' components and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specifications
- 1.4** Relevant plans, drawings and manuals are selected and interpreted, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specifications
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Disassemble hydro turbine

- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 2.2** Hydro turbine is disassembled, in accordance with workplace procedures and manufacturers' specifications
- 2.3** Hydro turbine components are removed in order of priority, in accordance with workplace procedures and manufacturers' specifications
- 2.4** Disassembly is carried out to facilitate reassembly, in

		accordance with workplace procedures
	2.5	Components are measured, and clearances are taken, to determine conformity to manufacturers' limits, and to ensure assembly is in accordance with manufacturers' specifications
	2.6	Measurements and clearances are recorded, in accordance with workplace procedures and manufacturers' specifications
3 Inspect hydro turbine components	3.1	Components are cleaned and inspected, in accordance with workplace procedures
	3.2	Faults are identified and recorded, in accordance with workplace procedures
	3.3	New components are inspected for compliance to manufacturers' specifications and hydro turbine requirements
	3.4	Components are prepared for assembly, in accordance with workplace procedures
4 Repair hydro turbine and components	4.1	Repairs are carried out, in accordance with workplace procedures
	4.2	Repairs are tested, and results analysed, to ensure conformance to manufacturers' specifications, in accordance with workplace procedures
	4.3	Data from testing is recorded, in accordance with workplace procedures
5 Complete work	5.1	Work is completed, and appropriate personnel are notified, in accordance with workplace procedures
	5.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	5.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	5.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT314B Maintain hydro turbines.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT314 Maintain hydro turbines

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - identifying hazardous materials
 - safe working practices
 - using risk control measures
- communicating with personnel
- completing work as per scheduling requirements
- determining permit to work requirements
- diagnosing and testing hydro turbines and components
- disassembling a hydro turbine using utilising removal techniques and procedures inspecting hydro turbine components including selecting and using components
- interpreting manufacturers' specifications and manuals
- maintaining hydro turbines using overhaul, maintenance and replacement techniques and procedures
- planning for hydro turbine maintenance work
- recognising worn, damaged or faulty components
- repairing hydro turbines and components
- using precision measuring equipment
- working with tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data recording techniques
- diagnostic and testing techniques

- hydro turbines supporting equipment
- hydro turbines types and characteristics
- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance of hydro turbines
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment and its location
- precision measuring equipment
- tools
- typical arrangements of hydro power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - identifying hazardous materials
 - safe working practices
 - using risk control measures
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT317 Diagnose and repair faults in mechanical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in a range of mechanical equipment; this may entail work to be carried out whilst machinery or power generation plant is online.

Diagnosing and repairing faults in mechanical equipment includes locating faults, overhauling equipment and/or fitting and adjusting mechanical equipment to meet power generation facility requirements.

Competency in this unit requires the ability to plan work, verify mechanical equipment faults, find mechanical equipment faults, determine the cause of mechanical equipment faults, repair or rectify mechanical equipment faults and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic, and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with workplace procedures
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specifications
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace

procedures

2 Verify fault

- 2.1** Normal performance and function of mechanical equipment is ascertained by consulting manufacturers' specifications and manuals, in accordance with workplace procedures
- 2.2** Fault indicators, technical information and diagnostic techniques are used to verify reported faults in accordance with workplace procedures
- 2.3** Faults are reproduced and monitored, if possible, in accordance with workplace procedures

3 Find fault

- 3.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 3.2** Fault finding is carried out with others, in accordance with workplace procedures
- 3.3** Mechanical equipment components, pipe work, fittings and support fixings are inspected for obvious faults, in accordance with workplace procedures
- 3.4** Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' specification

4 Determine cause of fault

- 4.1** Appropriate personnel are consulted, if required, about faulty mechanical equipment, in accordance with workplace procedures
- 4.2** Maintenance records on mechanical equipment are consulted, in accordance with workplace procedures
- 4.3** Conclusions about the nature and cause of the fault, based on analysis of evidence, are used, in accordance with workplace procedures

5 Repair fault

- 5.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures site requirements
- 5.2** Faulty, worn, damaged or unsecured components are replaced or repaired, in accordance with workplace procedures
- 5.3** Parts and components are selected and replaced, as required, in accordance with workplace procedures and manufacturers' specification

- 5.4 All faults are repaired or rectified, in accordance with the work plan
 - 5.5 Final inspection is performed, in accordance with workplace procedures
- 6 **Complete work**
 - 6.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 6.3 Tools and equipment are cleaned, maintained and stored in accordance with workplace procedures
 - 6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT317B Diagnose and repair faults in mechanical equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT317 Diagnose and repair faults in mechanical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - safe working practices
 - using risk control measures
- communicating with personnel
- completing work as per scheduled requirements
- determining cause of mechanical equipment fault
- determining permit to work requirements
- finding mechanical equipment fault using fault finding and diagnostic techniques
- identifying equipment and materials
- interpreting manufacturers' specifications and manuals
- locating technical drawings and plans
- planning for diagnosing and repairing faults in mechanical equipment work
- repairing mechanical equipment fault using repairing techniques and procedures
- utilising levelling and alignment techniques
- utilising test and measurement instruments
- verifying mechanical equipment fault using verification techniques
- working with tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- fault finding and diagnostic techniques
- generation plant and equipment, its location and operation
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- performance, characteristics and function of mechanical equipment
- permit to work system
- repair techniques
- technical drawings and plans
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - safe working practices
 - using risk control measures
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT318 Conduct generator mechanical maintenance

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct mechanical maintenance on an electrical generating unit.

A power generation facility typically maintains several independent generating units which can be brought online or taken offline as demand fluctuates in the system. Regular maintenance ensures that all electrical generating units are operating to maximum efficiency.

Competency in this unit requires the ability to plan work, remove associated equipment, perform generator maintenance, replace generator associated equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic, and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned tasks are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Remove associated equipment	2.1 Work notations are confirmed, in accordance with workplace procedures 2.2 Associated generator equipment is disconnected, in accordance with workplace procedures 2.3 Associated generator equipment is removed, in accordance with workplace procedures 2.4 Associated generator equipment is inspected for abnormalities, in accordance with workplace procedures
3 Perform generator maintenance	3.1 Generator maintenance is performed, in accordance with workplace procedures and manufacturers' specification 3.2 Generator is dismantled, clearly marked for identification and relevant data or sketches are noted or drawn, in accordance with workplace procedures 3.3 Components are prepared for reassembly, in accordance with manufacturers' drawings or manuals and workplace procedures 3.4 New components are inspected, in accordance with workplace procedures, to ensure compliance with manufacturers' specification 3.5 Dimensional inspection is performed, in accordance with workplace procedures, on generator and components to ensure compliance with manufacturers' specifications 3.6 Components are reassembled for testing, in accordance with workplace procedures and manufacturers' specification 3.7 Components are levelled, aligned and coupled, in accordance with workplace procedures and manufacturers' specification
4 Replace generator associated equipment	4.1 Associated generator equipment is replaced and connected, in accordance with workplace procedures 4.2 Generator is rotated and checks are carried out, in accordance with workplace procedures, to ensure operating conditions are in accordance with manufacturers' specifications 4.3 Modifications outside of manufacturers' specifications

are approved by appropriate personnel and are documented, in accordance with workplace procedures

4.4 Final inspection is completed, in accordance with workplace procedures

5 Complete work

5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures

5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures

5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures

5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT318B Conduct generator mechanical maintenance.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT318 Conduct generator mechanical maintenance

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - ascertaining hazardous materials
 - emergency procedures
 - risk control measures
 - safe working practices
- assembling and disassembling equipment
- balancing, levelling and aligning
- communicating with personnel
- completing work as per scheduling requirements
- conducting transmissions and/or couplings
- determining permit to work
- identifying components including recognising worn, damaged or faulty components
- interpreting technical drawing, manufacturers' specifications and manuals
- performing generator mechanical maintenance using overhaul and maintenance techniques and procedures
- planning for generator mechanical maintenance work
- removing generator mechanical associated equipment using removal techniques and procedures
- replacing generator mechanical associated equipment using replacement techniques and procedures
- undertaking isolations
- using tools and measuring equipment
- utilising assessment and data analysis techniques and tools
- working with diagnosis and testing techniques

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- advanced balancing, levelling and aligning techniques
- construction of mechanical generators
- diagnostic and testing techniques
- generator mechanical maintenance
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications
- measuring equipment
- permit to work system
- plant and equipment and its location
- technical drawings and plans
- tools
- transmissions and couplings
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - ascertaining hazardous materials
 - emergency procedures
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment

currently used in industry

- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT340 Fabricate metal structures and components

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to fabricate metal structures and components required to facilitate the installation, modification and maintenance of equipment associated with the electricity supply industry generation sector.

Fabrication is the construction of metal structures and components using cutting, bending and assembling processes.

Competency in this unit requires the ability to plan work, fabricate structures and components and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Fabricate metal structures

- 2.1** Materials are prepared prior to fabrication, in

and components

accordance with workplace procedures

- 2.2** Jigs or templates are manufactured, as required, in accordance with workplace procedures
- 2.3** Materials are marked out and dimensions are checked, in accordance with workplace procedures
- 2.4** Materials are cut and formed, using appropriate machinery and tools, in accordance with workplace procedures
- 2.5** Tools and equipment are operated during fabrication tasks, in accordance with workplace procedures and manufacturers' specifications
- 2.6** Metal structures and components are assembled, using appropriate methods, in accordance with workplace procedures and manufacturers' specifications
- 2.7** Distortion is prevented or controlled by applying appropriate techniques, in accordance with workplace procedures
- 2.8** Final inspection is performed, in accordance with workplace procedures

3 Complete work

- 3.1** Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 3.2** Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3** Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 3.4** Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT340B Fabricate metal structures and components

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT340 Fabricate metal structures and components

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduling requirements
- determining permit to work requirements
- fabricating and assembling metal structures and components
- fabricating metal structures and components
- fabricating, assembling and installing structures and components
- implementing legislation, industry standards, codes of practices and regulations
- interpreting manufacturers' specifications and manuals
- laying out and marking out metal structures and components
- making jigs and templates
- performing precision measurements
- planning for fabricating metal structures and components work
- reading technical drawings
- selecting materials and resources
- using tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- assembly techniques
- distortion control
- fabrication of metal structures and components
- generation plant and equipment and its location
- jigs and templates
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- mechanical cutting, forming and shaping
- permit to work system
- sheet metal work
- technical drawings
- tools and equipment
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT346 Maintain electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of electrical equipment including, but not limited to, rotating and static machines, appliances, luminaries and associated control equipment, but it excludes High Voltage (H.V.) equipment.

Maintenance is an essential part of the ongoing care and upkeep of electrical equipment, defined as any machine, simple or complex, powered by electricity in a power generation facility, that is undertaken to ensure optimal efficiency.

Competency in this unit requires the ability to plan work, carry out maintenance on electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance

		with the workplace procedures
	1.8	Work area is prepared, in accordance with workplace procedures
2 Carry out electrical equipment maintenance	2.1	Isolations are confirmed, in accordance with workplace procedures
	2.2	Electrical equipment is maintained using appropriate plans, drawings and manuals, in accordance with workplace procedures
	2.3	Resets or adjustments to electrical equipment are carried out, in accordance with workplace procedures
	2.4	Maintenance on electrical equipment is completed, in accordance with workplace procedures, without damage or loss to other equipment
	2.5	Final inspection of electrical equipment is carried out, in accordance with workplace procedures
3 Complete work	3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT346B Maintain electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT346 Maintain electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety(WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out electrical equipment maintenance using tools and equipment
- communicating with personnel
- determining permit to work requirements
- finalising work completion details
- identifying and selecting resources and materials
- implementing legislation, industry standards, codes of practice and regulations
- maintaining electrical equipment using manufacturers' specifications and manuals
- performing isolations
- planning for electrical equipment maintenance work
- resetting and/or readjusting electrical equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- electrical equipment
- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance of electrical equipment

- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment, its location and characteristics
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT347 Maintain complex electrical equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of complex High Voltage (H.V.) electrical equipment.

Maintenance is an essential part of the ongoing care and upkeep of complex and High Voltage electrical equipment that is undertaken to ensure optimal efficiency in a power generation facility.

Competency in this unit requires the ability to plan work, carry out maintenance on complex electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEPMNT346 Maintain electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Carry out complex electrical equipment maintenance

- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 2.2** Electrical equipment is maintained using appropriate plans, drawings and manuals, in accordance with workplace procedures
- 2.3** Resets or adjustments on complex electrical equipment is carried out, in accordance with workplace procedures

- 2.4 Maintenance on complex electrical equipment is completed, in accordance with workplace procedures, without damage or loss to other equipment
 - 2.5 Final inspection is carried out, in accordance with workplace procedures
- 3 **Complete work**
 - 3.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 3.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 3.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT347B Maintain complex electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT347 Maintain complex electrical equipment

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out complex electrical maintenance
- communicating with personnel
- determining permit to work requirements
- finalising work completion details
- implementing legislation, industry standards, codes of practice and regulations
- maintaining complex electrical equipment using maintenance procedures
- performing isolations
- planning for complex electrical equipment maintenance work
- resetting and/or readjustment
- selecting materials
- using manufacturers' specifications, circuit plans and manuals

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- circuit plans
- complex electrical equipment
- isolations
- legislation, industry standards, codes of practice and regulations

- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment, and its location
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT348 Maintain electrical electronic equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of electronic electrical equipment containing solid state components, complex control panels and complex control equipment.

Maintenance includes performing inspections, testing, measurement, replacement and adjustments on electrical electronic equipment to ensure optimal efficiency.

Competency in this unit requires the ability to plan work, carry out maintenance on electronic electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace

		procedures
2 Carry out maintenance	2.1	Isolations are confirmed, in accordance with workplace procedures
	2.2	Electrical electronic equipment is maintained using appropriate plans, drawings and manuals, in accordance with workplace procedures
	2.3	Resets or adjustments, are carried out, in accordance with workplace procedures
	2.4	Maintenance, reset or adjustment is completed, in accordance with workplace procedures, without damage or loss to other equipment
	2.5	Final inspection is carried out, in accordance with workplace procedures
3 Complete work	3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT348B Maintain electrical electronic equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT348 Maintain electrical electronic equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control procedures
 - safe working practices
- carrying out electrical electronic maintenance using maintenance procedures
- communicating with personnel
- completing work
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- maintaining electrical electronic equipment
- operating with installation techniques and procedures
- planning for electrical electronic equipment maintenance work
- selecting materials
- using tools and equipment
- utilising data analysis techniques and tools
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- characteristics and operation of electronic equipment

- electrical installation practices
- equipment and materials
- legislation, industry standards, codes of practice and regulations
- maintaining electrical electronic equipment
- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, and its location
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control procedures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT350 Modify electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to perform modifications to electrical equipment which may include, but is not limited to alterations, additions or adjustments.

Electrical equipment is any machine, simple or complex, powered by electricity used in a power generation facility. Modifications can include any changes to electrical equipment which may alter it from the manufacturers' specifications.

Competency in this unit requires the ability to plan work, modifying electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Carry out electrical

- 2.1** Isolations are confirmed, in accordance with workplace

equipment modifications	procedures
2.2	Electrical equipment is modified using appropriate plans, drawings and manuals, in accordance with workplace procedures
2.3	Modifications on electrical equipment are carried out, in accordance with workplace procedures, without damage or loss to other equipment
2.4	Modified electrical equipment is set up to meet operational requirements, in accordance with workplace procedures and manufacturers' specification
2.5	Final inspection on electrical equipment is performed, in accordance with workplace procedures
3 Complete work	
3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
3.2	Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT350B Modify electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT350 Modify electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- applying modification techniques and procedures
- carrying out electrical equipment modifications
- communicating with personnel
- determining permits to work
- finalising work completion details
- inspecting electrical equipment
- modifying electrical equipment
- performing isolations
- planning for electrical equipment modification work
- selecting materials
- using manufacturers' specifications and manuals

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- electrical equipment
- inspection techniques
- isolations

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- modification techniques
- permit to work system
- power generation plant and equipment, and its location
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT351 Test and commission electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct testing and commissioning of electrical wiring systems and equipment.

Commissioning and testing is the process of ensuring that all electrical wiring systems which includes cabling and associated devices such as switches, distribution boards, sockets and fittings and equipment in a power generation facility are meeting operational requirements.

Competency in this unit requires the ability to plan work, test wiring systems, test electrical equipment, commission electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control

		measures are selected and implemented, in accordance with workplace procedures
	1.8	Work area is prepared, in accordance with workplace procedures and requirements
2 Test electrical wiring systems	2.1	Isolations for work are confirmed, in accordance with workplace procedures
	2.2	Electrical wiring systems are tested using appropriate plans, drawings and manuals, in accordance with workplace procedures
	2.3	Electrical wiring systems, including enclosures and/or supports, are inspected in accordance with workplace procedures, prior to testing to ensure absence of any damage, defects and deterioration
	2.4	Fixed electrical wiring is tested, as required, and results are documented to confirm compliance with job specification
3 Test electrical equipment	3.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures site requirements
	3.2	Electrical equipment is tested using appropriate plans, drawings and manuals, in accordance with workplace procedures
	3.3	Test conditions are confirmed, and equipment is inspected, in accordance with workplace procedures, to ensure absence of damage, defects and deterioration
	3.4	Electrical equipment is tested using appropriate testing techniques, in accordance with workplace procedures
	3.5	Electrical equipment test results are documented to confirm compliance with job specification
4 Commission electrical equipment	4.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	4.2	Electrical equipment is commissioned using appropriate plans, drawings and manuals, in accordance with workplace procedures
	4.3	Equipment is set up, in accordance with workplace procedures, operational requirements or manufacturers'

specifications

- 4.4 Testing and monitoring procedures are followed, and results are documented to ensure electrical equipment functions within manufacturers' specifications
- 4.5 Electrical equipment is commissioned, in accordance with workplace procedures
- 4.6 Final inspection on electrical equipment is carried out, in accordance with workplace procedures

5 Complete work

- 5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 5.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT351B Test and commission electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT351 Test and commission electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- commissioning electrical equipment
- completing work as per scheduling requirements communicating with personnel
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- inspecting and testing wiring systems
- inspecting, testing and monitoring electrical equipment
- planning testing and commissioning electrical equipment work
- selecting materials
- using manufacturers' specifications and manuals

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- characteristics and operation of electrical equipment
- electrical equipment commissioning
- equipment and materials
- inspections of wiring systems and electrical equipment
- isolations

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment, and its location
- testing methods and techniques
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT355 Install complex electronic instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the installation of complex electronic instrumentation equipment used in multi-loop configurations including, but not limited to, totaliser units, laboratory and field analysers and signal characterising, microprocessor control, interface, ultrasonic and nucleonic equipment.

Installation of complex electronic instrumentation equipment in a power generation facility is typically performed in conjunction with manufacturers' specifications to ensure serviceability and reliability.

Competency in this unit requires the ability to plan work, install complex electronic instrumentation equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEIC0022 Install instrumentation and control apparatus and associated equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Install complex electronic instrumentation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures and
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

- 2.1** Isolations are confirmed, in accordance with workplace

equipment	procedures
	2.2 Electronic instrumentation equipment is assembled, positioned and secured, in accordance with workplace procedures, plans, drawings and manuals
	2.3 Conductors are run, secured, glanded and terminated to job specifications, in accordance with workplace procedures
	2.4 Final inspection is carried out, in accordance with workplace procedures
3 Complete work	3.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	3.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT355B Install complex electronic instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT355 Install complex electronic instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- identifying and selecting materials
- implementing legislation, codes of practice, regulations and industry standards
- installing electronic instrumentation equipment using installing techniques and procedures
- interpreting technical drawings and manufacturers' manuals
- planning for installing complex electronic instrumentation equipment work
- undertaking termination procedures
- using tools and equipment
- utilising test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- installation requirements
- installing electronic instrumentation equipment

- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment and its location
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT356 Maintain instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of instrumentation equipment including, but not limited to, process measurement, control and analytical instrumentation.

Instrumentation equipment measures, monitors or controls flows, temperature, levels or pressure and typically forms part of the control system in a power generation facility. Maintenance is an essential part of the ongoing care and upkeep required to ensure all instrumentation equipment is operationally efficient.

Competency in this unit requires the ability to plan work, maintain instrumentation equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare for work

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specifications
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

2 Carry out instrumentation equipment maintenance

- 2.1** Isolations are confirmed, in accordance with workplace procedures and site requirements
- 2.2** Instrumentation equipment is maintained, in accordance with workplace procedures, plans, drawings and manuals

- 2.3 Calibration or adjustments are carried out to ensure instrumentation equipment operates within plant parameters, in accordance with workplace procedures
 - 2.4 Maintenance and calibration adjustments are completed, in accordance with workplace procedures, without damage or unnecessary loss to other equipment
 - 2.5 Final inspection is carried out, in accordance with workplace procedures
- 3 **Complete work**
 - 3.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 3.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 3.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT356B Maintain instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT356 Maintain instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - hazard identification
 - risk control measures
 - safe working practices
 - using emergency procedures
- carrying out maintenance on instrumentation equipment
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- identifying and selecting materials
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- maintaining instrumentation equipment using maintenance and calibration techniques and procedures
- performing with testing and measurement instruments
- planning for instrumentation equipment maintenance work
- utilising tools and equipment
- working with data analysis techniques and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials

- installing electronic instrumentation equipment
- instrument installation practices
- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance and instrument calibration techniques
- manufacturers' specifications and manuals
- permit to work system
- test and measurement instruments
- types of instrumentation equipment
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - hazard identification
 - risk control measures
 - safe working practices
 - using emergency procedures
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT357 Diagnose and repair faults in instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to diagnose and repair instrumentation equipment, including, but not limited to, sensor elements, signal characterising equipment, input and output blocks, controllers, transducers and final elements.

A fault is defined as an abnormal condition or defect at the component, equipment or system level which may lead to a failure. Diagnosing and repairing faults ensures the smooth and efficient operation of all instrumentation equipment in a power generation facility.

Competency in this unit requires the ability to plan work, find and verify instrumentation equipment faults, determine cause and then repair faults in instrumentation equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance, in accordance with workplace procedures and job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

2 Diagnose and verify faults

- 2.1** Normal performance and function of instrumentation equipment is ascertained using manufacturers' manuals and industry standards, in accordance with workplace procedures

- 2.2 Fault indicators, technical information and diagnostic techniques are used to verify reported faults, in accordance with workplace procedures
 - 2.3 Faults are reproduced and monitored, in accordance with workplace procedures
- 3 Find faults**
 - 3.1 Isolations for work are confirmed, where appropriate, in accordance with workplace procedures and site requirements
 - 3.2 Instrumentation equipment components, wires, cables, terminations and support fixings are inspected for faults, in accordance with workplace procedures
 - 3.3 Diagnostic techniques are selected and used to determine faults, in accordance with workplace procedures
 - 3.4 Components are disconnected, to enable accurate test measurements of suspected faulty components without the concern of back feed readings, in accordance with workplace procedures
 - 3.5 Test and measurement instruments are used, in accordance with workplace procedures, manufacturers' specifications and job requirements
- 4 Determine cause of faults**
 - 4.1 Appropriate personnel are consulted on faulty equipment, in accordance with workplace procedures
 - 4.2 Information from fault indicators and maintenance records are used, in accordance with workplace procedures
 - 4.3 Conclusions about the nature and cause of the fault are determined from an analysis of the evidence, in accordance with workplace procedures
- 5 Repair faults**
 - 5.1 Isolations for work are confirmed, in accordance with workplace procedures and site requirements
 - 5.2 Faulty components are replaced or repaired, in accordance with manufacturers' specifications and workplace procedures
 - 5.3 Components disconnected for testing are reconnected, and all terminations are checked to ensure they are electrically and mechanically sound, in accordance with

workplace procedures

5.4 All faults are repaired, in accordance with workplace procedures

5.5 Final inspection is performed, in accordance with workplace procedures

6 Complete work

6.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures

6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures

6.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures

6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT357B Diagnose and repair faults in instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT357 Diagnose and repair faults in instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining cause of instrumentation equipment fault
- determining permit to work requirements
- diagnosing and repairing faults in instrumentation equipment
- finding instrumentation equipment fault using fault finding and diagnostic techniques
- identifying and selecting materials
- implementing regulations, legislation, industry standards and codes of practice
- interpreting manufacturers' specifications and manuals
- planning for diagnosis and fault repair of instrumentation equipment work
- repairing instrumentation equipment fault
- using tools and equipment
- verifying instrumentation equipment fault using data analysis techniques and tools
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- diagnosing and repairing faults in instrumentation equipment
- diagnostic and fault finding techniques and procedures
- equipment and materials
- instrument calibration techniques
- instrumentation equipment
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment and its location
- repair and verification techniques
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT358 Modify instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct modifications of instrumentation equipment, including but not limited to sensor elements, signal characterising equipment, input and output blocks, controllers, transducers and final elements.

Modifications to instrumentation equipment, that forms part of the control system in a power generation facility, includes any changes which may alter it from the manufacturers' specifications.

Competency in this unit requires the ability to plan work, carry out modifications of instrumentation equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

2 Carry out instrument equipment modifications

- 2.1** Isolations are confirmed, in accordance with workplace procedures
- 2.2** Instrumentation equipment is modified, in accordance with workplace procedures, plans, drawings and

manuals

- 2.3 Modifications are completed, in accordance with workplace procedures, and without unnecessary damage or loss to other equipment
- 2.4 Modified instrumentation equipment is set up to suit operational requirements, in accordance with workplace procedures and manufacturers' specifications
- 2.5 Final inspection is performed, in accordance with workplace procedures

3 Complete work

- 3.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
- 3.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 3.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT358B Modify instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT358 Modify instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out modifications of instrumentation equipment using modification techniques and procedures completing work
- communicating with personnel
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specification and manuals
- planning for instrumentation equipment modification work
- selecting materials
- using tools and equipment
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- instrumentation equipment and technology
- isolations
- legislation, industry standards, codes of practice and regulations

- manufacturers' specifications and manuals
- modification techniques
- modifying instrumentation equipment
- permit to work system
- plant and equipment and its location
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT359 Test and commission instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct testing and commissioning of instrumentation equipment including, but not limited to, sensor elements, signal characterising equipment, input and output blocks, controllers, transducers and final elements.

Commissioning and testing is the process of ensuring that all instrumentation equipment, that forms part of the control system in a power generation facility, is working according to operational requirements.

Competency in this unit requires the ability to plan work, testing wiring systems, testing piping and tubing systems, testing instrumentation equipment, commissioning instrumental equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

2 Test wiring systems

- 2.1** Isolations for work are confirmed, in accordance with workplace procedures and site requirements
- 2.2** Wiring systems are tested, in accordance with workplace procedures, plans, drawings and manuals

- 2.3 Wiring systems, including enclosures and supports, are inspected prior to testing, to ensure absence of damage, defect and deterioration, in accordance with workplace procedures
 - 2.4 Fixed wiring is tested, as appropriate, in accordance with workplace procedures, and the results are documented to confirm compliance with job specification
- 3 Test piping and tubing systems**
 - 3.1 Isolations are confirmed, in accordance with workplace procedures and site requirements
 - 3.2 Piping and tubing systems are tested, in accordance with workplace procedures, plans, drawings and manuals
 - 3.3 Piping and tubing systems, including enclosures and supports, are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects or deterioration
 - 3.4 Fixed piping and tubing is tested, as appropriate, in accordance with workplace procedures, and results are documented to confirm compliance with job specification
- 4 Test equipment**
 - 4.1 Isolations are confirmed, in accordance with workplace procedures and site requirements
 - 4.2 Instrumentation equipment is tested, in accordance with workplace procedures, plans, drawings and manuals
 - 4.3 Test conditions are confirmed and the equipment is inspected, in accordance with workplace procedures, to ensure absence of damage, defects and deterioration
 - 4.4 Instrumentation equipment is tested using appropriate test techniques, in accordance with workplace procedures
 - 4.5 Instrumentation equipment test results are documented, in accordance with workplace procedures, to confirm compliance with job specification
- 5 Commission equipment**
 - 5.1 Isolations are confirmed, in accordance with workplace procedures and site requirements
 - 5.2 Instrumentation equipment is commissioned, in accordance with workplace procedures, using

appropriate plans, drawings and manuals

- 5.3 Instrumentation equipment is set up, in accordance with workplace procedures, operational requirements and manufacturers' specifications
- 5.4 Testing and monitoring procedures are followed, in accordance with workplace procedures, and results are monitored and documented to ensure equipment operates within job specification
- 5.5 Instrumentation equipment is commissioned, in accordance with workplace procedures
- 5.6 Final inspection is carried out, in accordance with workplace procedures

6 Complete work

- 6.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 6.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT359B Test and commission instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT359 Test and commission instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- commissioning equipment
- commissioning equipment
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work system
- implementing legislation, codes of practice, regulations and industry standards
- inspecting, monitoring and testing wiring systems, piping and tubing systems and instrumentation equipment
- interpreting manufacturers' specifications and manuals
- performing with test and measurement instruments
- planning for testing and commissioning instrumentation equipment work
- selecting materials
- testing and commissioning instrumentation equipment using testing techniques
- using tools and equipment
- utilising commissioning techniques and procedures
- working with data analysis techniques and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- equipment and materials
- instrument calibration techniques
- instrumentation systems and operational requirements
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment and its location
- safe working practices workplace documentation
- test and commission instrumentation equipment
- test and measurement instruments
- testing and commissioning techniques
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT366 Maintain power plant inverter systems

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of power generation plant inverter systems.

Maintenance includes the regular monitoring, inspection and verification of the safe and efficient operation of a power generation facility's inverter system.

Competency in this unit requires the ability to plan work, carry out inverter system maintenance and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practices

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace

		procedures
2 Carry out inverter system maintenance	2.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	2.2	Inverter system is maintained, in accordance with workplace procedures, plans, drawings and manuals
	2.3	Reset or adjustment is carried out, in accordance with workplace procedures, to ensure inverter system operates within requirements
	2.4	Maintenance, of inverter system is carried out, in accordance with workplace procedures, without damage or loss to other equipment
	2.5	Final inspection is carried out, in accordance with workplace procedures
3 Complete work	3.1	Work is completed and appropriate personnel are notified, in accordance with workplace requirements
	3.2	Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
	3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT366A Maintain power plant inverter systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT366 Maintain power plant inverter systems

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work and finalising completion details
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- installation techniques and procedures
- interpreting manufacturers' specifications and manuals
- maintaining power plant inverter systems using maintenance procedures
- planning for power plant inverter system work
- selecting materials and resources
- undertaking isolations

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- inverter plant and equipment, and its location and operation
- isolations
- legislation, industry standards, codes of practice and regulations

- maintenance of power inverter plant systems
- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- resources and materials
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - potential hazards
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT367 Install and commission stationary gas fuelled reciprocating engines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the installation and commissioning of stationary gas fuelled reciprocating engines.

Installation and commissioning is a key feature of placing stationary gas fuelled reciprocating engines into service. Completing installation and commissioning correctly ensures the reliability of stationary gas fuelled reciprocating engines for its service life.

Competency in this unit requires the ability to work safely to installation standards matching the plant or equipment, location, components and fuel train pipe work relevant to given specifications. Commissioning plant and equipment includes performing precommissioning tests, start ups and adjusting components and controls for safe and efficient operation. It also includes completing all necessary installation and commissioning documentation. Individuals will, in general, work as a maintenance operative, in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practices

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

CPCCWHS1001 Work safely in the construction industry

HLTAID009 Provide cardiopulmonary resuscitation

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install and commission stationary gas fuelled reciprocating engine

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations are obtained and implemented, in accordance with workplace procedures
- 1.2** Health and safety risks are identified and risk control measures are followed, in accordance with workplace procedures
- 1.3** Safety hazards that have not previously been identified are noted and risk control measures are implemented, in accordance with workplace procedures
- 1.4** Design specification for gas fuelled reciprocating engines to be installed and commissioned are accessed, analysed and confirmed through a detailed site inspection
- 1.5** Design specification matters requiring clarification are resolved through liaison with designer and gas authorities
- 1.6** Formal authority to proceed with installation and commissioning of stationary gas fuelled reciprocating engine is obtained before commencing work, in accordance with workplace procedures, regulatory and code of practice requirements
- 1.7** Installation is prepared and is sequenced, in accordance with workplace procedures and quality assurance requirements
- 1.8** Nature and location of the installation and commissioning of the stationary gas fuelled reciprocating engine is determined from documentation or appropriate personnel to establish scope of work and assigned roles to be undertaken

- 1.9** Stationary gas fuelled reciprocating engine plant, equipment component specifications and manufacturers' manuals are obtained
 - 1.10** Plant, equipment, fuel train pipe work and components are identified and locations are sequenced within the constraints of site and work requirements
 - 1.11** Materials needed for installation are obtained, in accordance with workplace procedures and design specifications
 - 1.12** Tools and equipment including personal protective equipment and testing devices are obtained, in accordance with workplace procedures and are checked for correct operation and safety
 - 1.13** Work area is prepared to support installation and commissioning of gas fuelled reciprocating engine plant and equipment
- 2 Install stationary gas fuelled reciprocating engine**
 - 2.1** Regulatory and code of practice recording and reporting requirements are satisfied throughout work sequence, in accordance with workplace procedures
 - 2.2** Gas and electrical circuits, machines and plant are checked as being isolated, in accordance with workplace procedures
 - 2.3** Stationary gas fuelled reciprocating engine components including fuel train, associated pipe work and flue/exhaust systems are installed, in accordance with workplace procedures, design specifications, technical standards and regulatory requirements
 - 2.4** Ventilation systems are installed, in accordance with workplace procedures and design specifications
 - 2.5** Electrical components, wiring enclosures and terminations are installed, in accordance with workplace procedures, design and manufacturers' specifications and regulatory requirements
 - 2.6** Ongoing compliance and safety inspections of installed gas fuelled reciprocating engine, equipment, pipe work, components and accessories is undertaken and identified defects are rectified
 - 2.7** Stationary gas fuelled reciprocating engine installation is

		carried out without waste of materials or damage to plant, equipment, pipe work, components, accessories, the surrounding environment or services using workplace identified sustainable energy principles and practices
	2.8	Unexpected situations are dealt with safely, in accordance with workplace procedures and the approval of authorised personnel
3 Commission stationary gas fuelled reciprocating engine	3.1	Gas and electrical safety checks and isolation procedures, including purging are completed and recorded to manufacturers' and regulatory requirements before testing and commissioning are commenced
	3.2	Operational parameters of individual components are tested and adjusted to conform to manufacturers' specifications
	3.3	Reciprocating engine operations are tested, first without, and then with fuel, and adjustments are completed, as required, with results recorded in accordance with workplace procedures and approving authority requirements
	3.4	Exhaust gases are analysed, in accordance with workplace procedures, industry practice and regulatory requirements
	3.5	Commissioning of stationary gas fuelled reciprocating engine is conducted without waste of materials or damage to apparatus and the surrounding environment or services using workplace sustainable energy procedures and practices
4 Completion and report installation and commissioning activities	4.1	Final check of installed gas fuelled reciprocating engine is made to verify compliance with regulatory and certification requirements
	4.2	Work area is cleared and materials are disposed of or are recycled, in accordance with legislation and workplace procedures
	4.3	Tools and equipment are cleaned, checked, serviced and stored, in accordance with manufacturers' recommendations and workplace procedures
	4.4	Work site is cleaned and made safe, in accordance with workplace procedures

- 4.5** Installed reciprocating engine equipment components, pipe work, flue, exhaust systems and accessories are documented and appropriate personnel are notified, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT367A Install and commission stationary gas fuelled reciprocating engines.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT367 Install and commission stationary gas fuelled reciprocating engines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - hazard identification
 - identifying hazards
 - risk control measures
 - safe working practices
- commissioning stationary gas fuelled reciprocating engine
- communicating with personnel
- completing and reporting on installation and commissioning activities
- completing documentation
- determining permit to work requirements
- identifying safety and/or site arrangements including hazardous area requirements
- implementing legislation, industry standards, codes of practice and regulations
- installing stationary gas fuelled reciprocating engine
- interpreting technical and plans drawings related to plant and/or equipment locations and pipe work connections
- obtaining formal authority to proceed with installation and commissioning
- preparing to install and commission stationary gas fuelled reciprocating engines
- recording results from testing
- rectifying defects using tools and equipment
- securing, aligning and connecting plant, equipment, pipe work, components and accessories accurately
- testing pressure, repairing leaks and purging fuel train system to design test pressures
- undertaking compliance and safety inspections
- using manufacturers' specifications and manuals

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- commission and installation processes
- compliance and safety inspections
- documentation and reports
- gas fuelled reciprocating engine types and characteristics
- gas fuels
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- potential defects
- pressure testing, repairing leaks and purging fuel train system to design test pressures
- safety and/or site arrangements including hazardous area requirements
- securement, alignment and connection of plant, equipment, pipe work, components and accessories
- stationary gas fuelled reciprocating engine plant and equipment drawings and plans
- tools and equipment
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT368 Repair and maintain stationary gas fuelled reciprocating engines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to isolate, disconnect, repair, reconnect and undertake maintenance of stationary gas fuelled reciprocating engines. It does not include repairs to the internal mechanical components of the engine.

Maintenance includes the regular monitoring, inspection and verification of the safe and efficient operation of a power generation facility's stationary gas fuelled reciprocating engine.

Competency in this unit requires the ability to work safely to relevant industry standards when disconnecting, carrying out repairs and replacing fuel train components to given specifications. It also includes reconnecting the engine including pre-start tests, start-up, adjusting components and controls for safe and efficient operation and completing all required documentation. Individuals will, in general, work as a maintenance operative, in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practices

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

CPCCWHS1001 Work safely in the construction industry

HLTAID009 Provide cardiopulmonary resuscitation

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to repair and maintain gas fuelled reciprocating engines

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) procedures are identified and implemented, in accordance with workplace procedures
- 1.2** Health and safety risks are identified and risk control measures are followed, in accordance with workplace procedures
- 1.3** Safety hazards that have not previously been identified are noted, and risk control measures are implemented and followed, in accordance with workplace procedures
- 1.4** Formal authority to proceed with repair and maintenance work is obtained, in accordance with workplace procedures
- 1.5** Repair and maintenance work is sequenced, in accordance with workplace procedures
- 1.6** Nature and location of repair and maintenance work is determined from documentation, or appropriate personnel, to establish scope of work and assigned roles
- 1.7** Stationary gas fuelled reciprocating engine plant, equipment and component specifications and manufacturers' manuals are obtained
- 1.8** Material needed for repair and maintenance work is obtained, in accordance with workplace procedures and is checked against job requirements
- 1.9** Tools and equipment, including personal protective equipment and testing devices are obtained, in accordance with workplace procedures and are checked for correct operation and safety

2 Repair and maintain gas fuelled reciprocating

- 2.1** Regulatory and code of practice recording and reporting requirements are completed, in accordance with

engines	workplace procedures
2.2	Gas and electrical circuits, machines and/or power generation plant are checked prior to commencement and are recorded as being isolated and safe, in accordance with workplace procedures
2.3	Nature and possible cause of stationary gas fuelled reciprocating engine faults, or out of specification performance, are identified from defect reports or operational records
2.4	Fault finding using observation, measurement, calculations, comparison with normal system and component parameter values is undertaken
2.5	Faults beyond the scope of gas fuel train, ignition or fume exhaust work are identified and arrangements are made for authorised personnel to rectify faults
2.6	Stationary gas fuelled reciprocating engine is disconnected, to carry out maintenance and repairs, in accordance with workplace procedures
2.7	Components are removed or dismantled, where necessary, and parts are stored to protect them against loss or damage
2.8	Faulty components are rechecked and their fault status is reconfirmed
2.9	Materials required to rectify faults are obtained, in accordance with workplace procedures
2.10	Repair and maintenance work is carried out without waste of materials or damage to apparatus, circuits, the surrounding environment or services, in accordance with workplace procedures and sustainable energy principles and practices
2.11	Stationary gas fuelled reciprocating engine repair is tested, in accordance with workplace procedures
2.12	Stationary gas fuelled reciprocating engine is reassembled, reconnected and tested to ensure it is operating safely and that it complies with relevant workplace and legislative requirements
3 Complete and report on	3.1 Final check of stationary gas fuelled reciprocating engine is made to verify compliance with legislative and

repair and maintenance

certification requirements

- 3.2** Work area is cleared and materials are disposed of or recycled, in accordance with workplace procedures
- 3.3** Tools and equipment are cleaned, checked, serviced and stored, in accordance with manufacturers' recommendations and workplace procedures
- 3.4** Work site is cleaned and made safe, in accordance with workplace procedures
- 3.5** Maintenance and repair work is documented and appropriate personnel are notified, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT368A Repair and maintain stationary gas fuelled reciprocating engines.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT368 Repair and maintain stationary gas fuelled reciprocating engines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
- communicating with personnel
- determining permit to work requirements
- disconnecting and reconnecting stationary gas fuelled reciprocating engine
- finding and rectifying faults
- preparing to repair and maintain stationary gas fuelled reciprocating engines
- repairing and maintaining stationary gas fuelled reciprocating engines including identifying faults completing and reporting on repair and maintenance work
- safe working practices implementing legislation, industry standards, codes of practice and regulations
- using manufacturers' specifications and manuals
- working with sustainable energy principles and practices

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- documentation and report requirements
- fault finding
- gas fuelled reciprocating engines
- gas fuels

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- reconnection and disconnection of stationary gas fuelled reciprocating engines
- stationary gas fuelled reciprocating engine repair and maintenance
- sustainable energy principles and practices
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT401 Install and maintain complex mechanical seals

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the installation and maintenance of complex mechanical seals which may involve fault finding, diagnosis and repair.

Installation of mechanical seals, which are leakage control devices used in power generation plant and equipment, is typically performed in conjunction with manufacturers' specifications to ensure serviceability and reliability. Maintenance ensures the ongoing care and upkeep of the seals to ensure optimal efficiency.

Competency in this unit requires the ability to plan work, remove complex mechanical seals for maintenance, maintain complex mechanical seals, replace and/or install complex mechanical seals and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

UEPMNT304 Maintain mechanical pumps

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace

- and site procedures
- 2 Remove complex mechanical seals for maintenance**
- 2.1** Isolations for work are confirmed, in accordance with workplace procedures
- 2.2** Complex mechanical seals are identified, in accordance with workplace procedures
- 2.3** Complex mechanical seals are removed, in accordance with workplace procedures
- 2.4** Complex mechanical seals are inspected for abnormalities, in accordance with workplace procedures
- 3 Maintain complex mechanical seals**
- 3.1** Maintenance is performed on complex seals, in accordance with workplace procedures and manufacturers' specifications
- 3.2** Complex mechanical seal assemblies are dismantled, in accordance with workplace procedures, using approved engineering principles
- 3.3** Components and/or parts are clearly marked and sketches produced, as required, in accordance with workplace procedures, for identification
- 3.4** Component wear and clearances are determined using precise measuring techniques and approved testing equipment, in accordance with workplace procedures and manufacturers' specifications
- 3.5** Components found to be faulty are repaired or replaced, in accordance with workplace procedures, to conform with manufacturers' specifications
- 3.6** New components are inspected for compliance and are prepared for reassembly, in accordance with workplace procedures and manufacturers' specifications
- 3.7** Component parts are refitted to complex mechanical seal assemblies, in accordance with workplace procedures and manufacturers' specifications
- 3.8** Modifications or alterations to complex mechanical seals are undertaken, in accordance with workplace procedures
- 4 Replace or install complex**
- 4.1** Equipment is prepared for complex mechanical seal

mechanical seals	replacement, in accordance with workplace procedures
4.2	Complex mechanical seals are replaced, in accordance with workplace procedures and manufacturers' specifications
4.3	All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
4.4	Machinery and/or plant are test run, monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specifications
5 Complete work	
5.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
5.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
5.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
5.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT401B Install and maintain complex mechanical seals.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT401 Install and maintain complex mechanical seals

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work
- determining permit to work requirements
- interpreting manufacturers' specifications and manuals
- maintain complex mechanical seals
- manufacturing and installing seals and gaskets
- planning for installation and maintenance of complex mechanical seals work
- recognising worn or damaged components
- remove complex mechanical seals for maintenance
- replace or install complex mechanical seals
- selecting materials and components
- undertaking dismantling and reassembling techniques
- using measuring equipment
- using tools
- utilising removal, installation and maintenance techniques and procedures
- working with diagnostic and testing techniques

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- diagnosis and repair of faults in complex mechanical seals
- generation plant and equipment, its location and operation
- isolations
- legislation, industry standards, codes of practice and regulations
- level and aligning techniques
- manufacturers' specifications and manuals
- materials and components
- permit to work system
- precision measuring equipment
- technical drawings
- test techniques
- tools
- types and materials of seals and gaskets
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT402 Conduct complex levelling and alignment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct levelling and the advanced alignment of power generation plant and machinery, this may include high speed rotating plant.

Levelling is the process in which differences in height between two or more points are determined. Alignment is placing or arranging in a straight line, this can include adjusting parts of a mechanism to produce a required relationship or orientation.

Competency in this unit requires the ability to plan and prepare work, perform alignments and complete all work tasks. Individuals will, in general, work as a maintenance operative in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18009 Perform levelling and alignment of machines and engineering components

MEM18055 Dismantle, replace and assemble engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected, in accordance with workplace procedures for compliance with job specification
- 1.4** Relevant plans, drawings and manual are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with the job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Perform alignment

- 2.1 Isolations for work are confirmed, in accordance with workplace procedures
- 2.2 Measurements are taken, and recorded, to facilitate compliance with manufacturers' specifications and job requirements
- 2.3 Levelling and alignment calculations are performed, and sketches are made, in accordance with workplace procedures
- 2.4 Power generation plant and machinery is levelled and aligned, and adjustments are made, in accordance with workplace procedures, to ensure compliance with manufacturers' specifications
- 2.5 Final alignment inspections are undertaken, and fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
- 2.6 Power generation plant and machinery is test run, monitored and adjusted, in accordance with workplace procedures and manufacturers' specifications

3 Complete work

- 3.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
- 3.3 Tools and equipment are maintained and stored in accordance with workplace procedures
- 3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT402B Conduct complex levelling and alignment

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT402 Conduct complex levelling and alignment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- calculating and applying adjustment techniques
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- operating precision measuring equipment
- performing alignment
- performing complex levelling and aligning principles whilst working to precise tolerances
- planning to conduct complex levelling and alignment work
- undertaking isolations
- using manufacturers' specifications and manuals
- utilising testing and inspection techniques
- working with technical drawings

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- calculations for alignment and levelling adjustments

- complex levelling and aligning practices
- inspection and testing methods
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work requirements
- power generation plant and equipment, its location and operation
- precision measuring equipment
- technical drawings
- tolerances
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - identifying hazards
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT403 Maintain complex mechanical valves

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake fault finding, diagnosis, repair or overhaul of complex mechanical valves, excluding associated servo or actuating units.

A fault is defined as an abnormal condition or defect of a mechanical valve which may lead to a failure in power generation facility equipment, systems and/or plant. Diagnosis and repair requires the identification of the type of fault, its cause and the determination of repair actions.

Competency in this unit requires the ability to plan work, remove mechanical valves for maintenance, perform mechanical valve maintenance, replace and/or install valves and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

UEPMNT303 Maintain mechanical valves

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturer specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with the workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Remove complex mechanical valves for maintenance

- 2.1** Isolations for work are confirmed, in accordance with workplace procedures
- 2.2** Complex mechanical valve is disconnected, in accordance with workplace procedures
- 2.3** Complex mechanical valve is removed, in accordance with workplace procedures
- 2.4** Complex mechanical valve is inspected for abnormalities, in accordance with workplace procedures

3 Perform complex mechanical valve maintenance

- 3.1** Maintenance is performed, in accordance with workplace procedures and manufacturers' specifications
- 3.2** Complex mechanical valve is dismantled, clearly marked for identification and sketches are drawn, in accordance with workplace procedures
- 3.3** Components are prepared for reassembly, in accordance with workplace procedures, manufacturers' drawings or manuals
- 3.4** New components are inspected, in accordance with workplace procedures, to ensure compliance with manufacturers' specifications
- 3.5** Dimensional inspection is performed, in accordance with workplace procedures, using precision measuring devices to ensure compliance with manufacturers' specifications
- 3.6** Components are reassembled for testing, in accordance with workplace procedures and manufacturers' specifications
- 3.7** Modifications or alterations are undertaken, in accordance with workplace procedures and manufacturers' specifications
- 3.8** Components are levelled, aligned, coupled and connected, in accordance with workplace procedures and manufacturers' specifications
- 3.9** Complex mechanical valves are pressure tested, monitored and adjusted, in accordance with workplace procedures and manufacturers' specifications

4 Replace or install complex mechanical valves	4.1	Equipment is prepared for valve replacement, in accordance with workplace procedures
	4.2	Complex mechanical valve is replaced, in accordance with workplace procedures and manufacturers' specifications
	4.3	Complex mechanical valve is connected, in accordance with workplace procedures and manufacturers' specifications
	4.4	Final inspection is completed, in accordance with workplace procedures
5 Complete work	5.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	5.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	5.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	5.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT403B Maintain complex mechanical valves.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT403 Maintain complex mechanical valves

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- analysing data using analysis techniques and tools
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- levelling and aligning using approved techniques
- performing complex mechanical valve maintenance using maintenance techniques and procedures
- performing dismantling and assembling techniques
- planning for maintenance of complex mechanical valve work
- reading technical drawings and data
- recognising worn or damaged components
- rectifying faults
- removing valves for complex mechanical valve maintenance using removal techniques
- replacing or installing complex mechanical valves using installation techniques and procedures
- selecting materials and components
- undertaking valve operational techniques
- utilising diagnostic and testing techniques
- working with precision measuring equipment and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- diagnostic and testing techniques
- legislation, industry standards, codes of practice and regulations
- level and aligning techniques
- maintain complex mechanical valves plant and equipment, its location and operation
- manufacturers' specifications and manuals
- measuring equipment
- permit to work system
- technical drawings and data
- tools
- typical arrangements of power production plant
- valve materials, components and operations of
- valve operating arrangements
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry

- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT404 Maintain complex mechanical pumps

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the maintenance of complex mechanical pumps which may include multi-stage centrifugal pumps, axial flow compressors, fans and blowers.

Maintenance is the process of regularly monitoring, inspecting and maintaining complex mechanical pumps in a power generation facility to ensure optimal performance.

Competency in this unit requires the ability to plan work, remove complex mechanical pumps for maintenance, maintain complex mechanical pumps, replace or install complex mechanical pumps and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18055 Dismantle, replace and assemble engineering components

UEPMNT304 Maintain mechanical pumps

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Remove complex mechanical pumps for

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigning roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturer specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

- 2.1** Isolations for work are confirmed, in accordance with

3 Maintain complex mechanical pumps	maintenance	workplace procedures
	2.2	Complex mechanical pump is disconnected, in accordance with workplace procedures
	2.3	Complex mechanical pump is removed, in accordance with workplace procedures
	2.4	Complex mechanical pump is inspected for abnormalities, in accordance with workplace procedures
4 Replace or install complex mechanical pumps	3.1	Maintenance is performed on complex mechanical pump, in accordance with workplace procedures and manufacturers' specifications
	3.2	Complex mechanical pump is dismantled for maintenance, in accordance with workplace procedures and manufacturers' specifications
	3.3	Sketches are made, data noted and components marked for identification or reassembly, in accordance with workplace procedures
	3.4	New components are inspected, in accordance with workplace procedures, for compliance with manufacturers' specifications
	3.5	Dimensional inspection is performed with precision measuring devices, in accordance with workplace procedures, to ensure compliance with manufacturers' specifications and results are recorded
	3.6	Complex mechanical pump is reassembled, using industry principles and approved techniques, in accordance with workplace procedures and manufacturers' specifications
	3.7	Modifications or alterations are undertaken, in accordance with workplace procedures
	4.1	Equipment and plant is prepared for complex mechanical pump replacement, in accordance with workplace procedures
	4.2	Complex mechanical pump is replaced, in accordance with workplace procedures and manufacturers' specifications
	4.3	Complex mechanical pump is levelled, aligned, coupled and connected, in accordance with workplace

procedures

- 4.4 All fastenings are torqued, in accordance with workplace procedures and manufacturers' specifications
- 4.5 Machinery, plant and pump are given a test run, then monitored and adjusted, as required, in accordance with workplace procedures and manufacturers' specifications

5 Complete work

- 5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
- 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT404B Maintain complex mechanical pumps.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT404 Maintain complex mechanical pumps

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- analysing using data analysis techniques
- applying Work, Health and Safety(WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- dismantling and reassembling techniques for maintaining complex mechanical valves
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- levelling and aligning with approved techniques
- maintaining complex mechanical pumps using maintenance techniques and procedures
- operating with torque techniques
- planning for maintenance of complex mechanical pump work
- reading technical drawings and data
- recognising worn or damaged components
- removing complex mechanical pumps for maintenance using removal techniques
- replacing or installing complex mechanical pumps using installation techniques and procedures
- selecting materials and components
- testing using diagnostic and testing techniques
- undertaking isolations and torqueing
- using tools

- utilising precision measuring equipment
- working with and applying fluid dynamics principles

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- analysis and data recording techniques
- diagnostic and testing techniques
- fluid dynamics
- isolations
- legislation, industry standards, codes of practice and regulations
- level and alignment techniques
- maintenance of complex mechanical pumps generation plant and equipment, its location and operation
- manufacturers' specifications and manuals
- materials and components of pumps
- permit to work system
- precision measuring equipment
- technical drawings and data
- tools
- torque techniques
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - risk control measures
 - hazard identification
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT408 Install hydro turbines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to install hydro turbines. The installation of a hydro turbine refers to a hydro turbine being removed from service, for repair and overhaul.

Installation is a key feature of placing hydro turbines into service, it can include conducting repairs and/or the overhaul of a hydro turbine to ensure reliability of operation during its service life.

Competency in this unit requires the ability to plan work, disassemble a hydro turbine, inspect hydro turbine's components, repair a hydro turbine and/or its' components and to report on all completed work tasks. Individuals will, in general, work under supervision as a maintenance operative in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

MEM12023 Perform engineering measurements

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

MEM18003 Use tools for precision work

MEM18006 Perform precision fitting of engineering components

MEM18009 Perform levelling and alignment of machines and engineering components

MEM18055 Dismantle, replace and assemble engineering components

UEPMNT402 Conduct complex levelling and alignment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

2 Disassemble hydro turbine	2.1 Isolations for work are confirmed, in accordance with workplace procedures
	2.2 Hydro turbine is disassembled, in accordance with manufacturers' specifications and workplace procedures
	2.3 Hydro turbine components are removed in priority order, in accordance with manufacturers' specification and workplace procedures
	2.4 Disassembly is carried out to facilitate reassembly, in accordance with workplace procedures
	2.5 Components are measured and clearances are taken, in accordance with workplace procedures, to determine conformity to manufacturer's limits and to ensure assembly meets manufacturers' specifications
	2.6 Measurements and clearances are recorded, in accordance with manufacturer' specifications and workplace procedures
3 Inspect hydro turbine components	3.1 Components are cleaned and inspected, in accordance with workplace procedures
	3.2 Faults are identified and recorded, in accordance with workplace procedures
	3.3 New components are inspected for compliance to manufacturers' specifications, in accordance with workplace procedures
	3.4 Components are prepared for assembly, in accordance with workplace procedures
4 Repair hydro turbine or components	4.1 Repairs are carried out, in accordance with workplace procedures
	4.2 Repairs are tested and results are analysed to ensure conformance to manufactures' specifications, in accordance with workplace procedures
	4.3 Data from testing is recorded, in accordance with workplace procedures
5 Reassemble hydro turbine	5.1 Equipment and plant is prepared for reassembly of hydro turbine, in accordance with workplace procedures.
	5.2 Isolations are confirmed, in accordance with workplace

procedures

- 5.3 Components are refitted, in accordance with workplace procedures and manufacturers' specifications.
- 5.4 Hydro turbine is assembled, in accordance with workplace procedures and manufacturers' specifications.
- 5.5 Hydro turbine is test run, and operating characteristics are monitored, to ensure compliance with manufacturers' specifications, in accordance with workplace procedures

6 Complete work

- 6.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
- 6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 6.3 Tools and equipment are maintained and stored, in accordance with workplace procedures
- 6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT408B Install hydro turbines.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT408 Install hydro turbines

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying maintenance and installation techniques
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - identifying hazardous materials
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- diagnosing and testing using precision measuring equipment
- disassembling hydro turbine
- identifying components
- implementing legislation, industry standards, codes of practices and regulations
- inspecting hydro turbine components
- interpreting manufacturers' specifications and manuals
- performing isolations
- planning for installation of hydro turbine work
- reassembling hydro turbine
- recognising worn, damaged or faulty components
- repairing hydro turbine or components using replacement techniques
- using drawings and data

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- data recording techniques
- diagnostic and test techniques
- hydro turbine types and characteristics
- installation and maintenance techniques
- isolations
- legislation, industry standards, codes of practices and regulations
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment, its location and operation
- technical drawings
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - identifying hazardous materials
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT410 Diagnose and repair faults in electronic equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in electronic equipment at board and component level; this may involve work to be carried out with equipment on line.

Diagnosing and repairing includes the inspection, testing and verification of the operation and reliability of electronic equipment including components, wires, cables, boards, terminations and support fixings used in a power generation facility.

Competency in this unit requires the ability to plan work, diagnose electronic equipment faults, find electronic equipment faults, determine cause of electronic equipment faults, repair electronic equipment faults and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures

	1.7	Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
	1.8	Work area is prepared, in accordance with workplace and site procedures
2 Verify electronic equipment fault	2.1	Normal performance and function of equipment is ascertained using manufacturers' manuals, in accordance with workplace procedures
	2.2	Fault indicators, technical information and diagnostic techniques are used to verify reported faults, in accordance with workplace procedures
	2.3	Electronic equipment faults are reproduced and are monitored, in accordance with workplace procedures
3 Find electronic equipment fault	3.1	Isolations for work are confirmed, in accordance with workplace procedures
	3.2	Electronic equipment components, wires, cables, terminations and support fixings are inspected for faults, in accordance with workplace procedures
	3.3	Diagnostic techniques are selected and used to determine faults, in accordance with workplace procedures
	3.4	Components are disconnected, in accordance with workplace procedures, to enable accurate test measurements of suspected faulty components ensuring back feed readings do not occur
	3.5	Test and measurement instruments are used, in accordance with workplace procedures, manufacturers' specifications and job requirements
4 Determine cause of electronic equipment fault	4.1	Appropriate personnel are consulted, in accordance with workplace procedures
	4.2	Information from fault indicators and maintenance records are used, in accordance with workplace procedures
5 Repair electronic equipment fault	5.1	Isolations are confirmed, in accordance with workplace procedures site requirements
	5.2	Faulty, worn, damaged or unsecured components are

replaced or repaired, in accordance with workplace procedures

5.3 Electronic equipment parts and components are selected and replaced, as required, in accordance with workplace procedures and manufacturers' specifications

5.4 Components disconnected for testing are reconnected, and all terminations are checked to ensure they are electrically and mechanically sound, in accordance with workplace procedures

5.5 Faults are repaired, in accordance with workplace procedures

5.6 Final inspection is performed, in accordance with workplace procedures

6 Complete work

6.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures

6.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures

6.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures

6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT410B Diagnose and repair faults in electronic equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT410 Diagnose and repair faults in electronic equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - hazard identification
 - risk control measures
 - safe working practices
 - using emergency procedures
- completing work as per scheduled requirements
- determining cause of electronic equipment faults
- determining permit to work requirements
- diagnosing and repairing faults in electronic equipment using diagnostic and fault finding techniques and procedures
- finding electronic equipment faults
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- planning for diagnosis and repair of faults in electronic equipment
- repairing electronic equipment faults using repair techniques and procedures
- selecting materials
- using tools and equipment
- utilising data analysis techniques and tools
- verifying electronic equipment faults using verification techniques
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- electronic equipment
- equipment and materials
- fault finding, testing, verification and diagnostic techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, its location and operation
- repair techniques
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - hazard identification
 - risk control measures
 - safe working practices
 - using emergency procedures
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT411 Diagnose and repair faults in complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in complex and High Voltage (H.V.) electrical equipment, this may involve work being carried out with equipment online.

Diagnosing and repairing faults includes the inspection, testing and verification of the operation and reliability of complex and H.V. electrical equipment used in a power generation facility.

Competency in this unit requires the ability to plan work, verify complex electrical equipment faults, find complex electrical equipment faults, determine cause of complex electrical equipment fault, repair complex electrical equipment fault and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in

- accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
 - 1.8** Work area is prepared, in accordance with workplace procedures
- 2 Diagnose complex electrical fault**
- 2.1** Normal performance and function of complex and High Voltage electrical equipment is reviewed, in accordance with workplace procedures
 - 2.2** Complex and High Voltage electrical equipment fault indicators and technical information are used, in accordance with workplace procedures, to diagnose and verify reported faults
 - 2.3** Complex and High Voltage electrical equipment symptoms are reproduced and monitored, if possible, in accordance with workplace procedures
- 3 Find complex electrical equipment fault**
- 3.1** Isolations for work are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2** Complex electrical equipment components, wires, cables, terminations and support fixings are inspected, in accordance with workplace procedures, for faults
 - 3.3** Diagnostic techniques are selected and used to determine complex electrical equipment faults, in accordance with workplace procedures
 - 3.4** Components are disconnected, in accordance with workplace procedures, to enable test measurements of suspected faulty components whilst ensuring no back feed readings occur
 - 3.5** Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' specifications
- 4 Determine cause of complex electrical equipment fault**
- 4.1** Appropriate personnel are consulted, if required, in accordance with workplace procedures
 - 4.2** Information from fault indicators and maintenance records are used, in accordance with workplace procedures

	4.3	Conclusions about the nature and cause of the fault from analysis of evidence is undertaken, in accordance with workplace procedures
5 Repair complex electrical equipment fault	5.1	Faulty, worn or damaged complex electrical equipment components are repaired, in accordance with workplace procedures
	5.2	Complex electrical equipment components disconnected for testing are reconnected, in accordance with workplace procedures, with terminations checked to ensure they are electrically and mechanically sound
	5.3	All faults are repaired, in accordance with workplace procedures
	5.4	Final inspection of complex electrical equipment is performed, in accordance with workplace procedures
6 Complete work	6.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	6.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	6.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	6.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT411B Diagnose and repair faults in complex

electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT411 Diagnose and repair faults in complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- implementing regulations, industry standards, codes of practice and legislation
- planning diagnosis and repair of faults in complex electrical equipment work
- repairing faults using repair techniques
- safe working practices using diagnostic and fault finding techniques and procedures
- selecting materials and resources
- using manufacturers' specifications and manuals
- utilising testing and measurement instruments
- verifying and identifying faults
- working with tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- diagnosis and repair of faults in complex electrical equipment
- fault finding and diagnostic methods and techniques
- isolations

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- materials to use in diagnosing and repairing complex electrical equipment
- permit to work system
- power generation plant and equipment, its location and operation
- repair methods and techniques
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT412 Modify complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake modifications of complex and High Voltage (H.V.) electrical equipment; this may include but is not limited to alterations, additions or adjustments.

Modifications are any changes to complex electrical equipment which may alter it from the manufacturers' specification, it can include alterations, additions or adjustments to complex and High Voltage (H.V.) electrical equipment to ensure they meet operational requirements.

Competency in this unit requires the ability to plan work, carry out complex electrical equipment modifications and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT350 Modify electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) standards, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures

	1.7	Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
	1.8	Work area is prepared, in accordance with workplace procedures
2 Carry out modifications	2.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures
	2.2	Complex electrical equipment is modified, in accordance with workplace procedures, plans, drawings and manuals
	2.3	Modifications are completed, in accordance with workplace procedures, without loss or damage to equipment
	2.4	Modified equipment is set up, in accordance with workplace procedures and manufacturers' specifications
	2.5	Final inspection is performed, in accordance with workplace procedures
3 Complete work	3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT412B Modify complex electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT412 Modify complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out modifications
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- employing test and measurement instruments
- implementing legislations, industry standards, codes of practice and regulations
- modifying complex electrical equipment using modification techniques using manufacturers' specifications, manuals and circuit plans
- planning for modification of complex electrical equipment work
- selecting materials
- utilising data analysis techniques and tools
- working with tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- complex electrical equipment and its operation
- equipment and materials

- generation plant and equipment, its location and operation
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications, circuit plans and manuals
- modifications of complex electrical equipment using modification techniques
- permit to work system
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT414 Test and commission complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct testing and commissioning of complex and High Voltage (H.V.) electrical wiring systems and equipment.

Commissioning and testing is the process of ensuring all systems and components of complex and High Voltage (H.V.) electrical wiring systems and equipment used within a power generation facility are working efficiently and safely according to operational requirements.

Competency in this unit requires the ability to plan work, test wiring systems in complex electrical equipment, test complex electrical equipment, commission complex electrical equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT351 Test and commission electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures

- 1.7 Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
 - 1.8 Work area is prepared, in accordance with workplace procedures
- 2 Test wiring systems**
 - 2.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 2.2 Complex electrical equipment wiring systems are tested, in accordance with workplace procedures, plans, drawings and manuals
 - 2.3 Wiring systems, including enclosures or supports, are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects and/or deterioration
 - 2.4 Fixed wiring is tested, in accordance with workplace procedures and results are documented to confirm compliance with job specification
- 3 Test complex electrical equipment**
 - 3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2 Complex electrical equipment is tested, in accordance with workplace procedures, plans, drawings and manuals
 - 3.3 Test conditions are confirmed and complex electrical equipment is inspected, in accordance with workplace procedures, to ensure absence of damage, defects or deterioration
 - 3.4 Complex electrical equipment is tested using appropriate techniques, in accordance with workplace procedures
 - 3.5 Complex electrical equipment test results are documented, in accordance with workplace procedures, to confirm compliance with job specification
- 4 Commission complex electrical equipment**
 - 4.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 4.2 Complex electrical equipment is commissioned, in accordance with workplace procedures, plans, drawings and manuals

- 4.3 Complex electrical equipment is set up, in accordance with workplace procedures, operational requirements and manufacturers' specifications
 - 4.4 Testing and monitoring procedures are followed, and results are monitored and documented to ensure equipment functions within manufactures' specifications
 - 4.5 Complex electrical equipment is commissioned, in accordance with workplace procedures
 - 4.6 Final inspection is carried out, as required, in accordance with workplace procedures
- 5 **Complete work**
 - 5.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
 - 5.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 5.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 5.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT414B Test and commission complex electrical equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT414 Test and commission complex electrical equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- commissioning complex electrical equipment
- commissioning equipment using commissioning procedures
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- employing data analysis techniques and tools
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- performing isolations
- planning for testing and commissioning complex electrical equipment work
- selecting materials
- testing and inspecting wiring systems and monitoring equipment using testing techniques
- using manufacturers' specifications and manuals
- using tools and equipment
- utilising testing and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- commission and test techniques
- complex electrical equipment
- equipment and materials
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, its location and operation
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT417 Inspect electrical generators and diagnose faults

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct inspections and diagnose faults in electrical generators.

An inspection is a critical appraisal involving the examination, measurement, testing, gauging, and comparison of electrical generator components and parts. An inspection will determine if an electrical generator is in a safe and reliable working condition and if it conforms to the manufactures' specifications.

Competency in this unit requires the ability to plan work, carry out electrical generator inspections, evaluate and analyse inspection results, prepare remedial action plans and update documentation. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT351 Test and commission electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Maintenance and operating history of electrical generator is obtained and reviewed, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) standards, legislative requirements, industry standards, codes of practice, manufacturers' specifications and workplace procedures are reviewed in preparation for work
- 1.3** Inspection of electrical generator is planned, sequenced and prioritised, in accordance with workplace and technical procedures
- 1.4** Resources are obtained and inspected for compliance with job specification
- 1.5** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.6** Potential hazards are identified and risk control measures are selected and implemented, in accordance

		with workplace procedures and inspection plan
2 Carry out generator inspection	2.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures
	2.2	Electrical generator is inspected using appropriate manuals, drawings and manuals, in accordance with workplace procedures
	2.3	Additional tests or inspections, if required, are identified and completed, in accordance with workplace procedures
	2.4	Final inspection is carried out, in accordance with workplace procedures
3 Evaluate and analyse inspection results	3.1	Test or inspection results and data are analysed, in accordance with workplace procedures
	3.2	Specialist assistance is sought, if required, on completion of analysis
4 Prepare remedial action plan	4.1	Remedial action plan, if required, is prepared, in accordance with workplace procedures
	4.2	Remedial actions are followed up, in accordance with workplace procedures, and are checked by appropriate personnel
5 Update documentation	5.1	Relevant records and documentation are updated, in accordance with workplace procedures
	5.2	Reports and documentation are forwarded to appropriate personnel, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT417B Inspect electrical generators and diagnose faults.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT417 Inspect electrical generators and diagnose faults

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- analysing inspection results and making recommendations
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out generator inspection
- communicating with personnel
- determining permit to work requirements
- evaluating and analysing inspection results
- implementing regulations, industry standards, codes of practice and legislation
- inspecting electrical generators and diagnosing faults
- interpreting manufacturers' specifications and manuals
- planning for electrical inspection of generators and the diagnosis of fault work
- preparing remedial action plans
- updating documentation
- utilising data analysis techniques and tools
- working with inspection techniques and procedures

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- generator types and characteristics

- inspections of electrical generators and diagnosing faults
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, its location and operation
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT419 Perform civil drafting

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to perform civil drafting and to use drawing equipment for the production of sectional, schematic and plan drawings.

Drafting is the creation of a technical drawing, schematic or plan of a mechanical device or structure for the purpose of determining how they have been created or works. Drafting can be completed by hand or with specially designed computer programs.

Competency in this unit requires the ability to prepare for drafting, perform civil drafting and complete work tasks. Individuals will, in general, work as a maintenance operative in a power generation facility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

MEM09002 Interpret technical drawing

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for drafting

2 Perform drafting

3 Complete work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Requirements including scope of work are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures

1.2 Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work

1.3 Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures

2.1 Civil structures and their assembly are drawn using sectional representations, in accordance with specification requirements

2.2 Civil structures are drawn to highlight critical features, in accordance workplace procedures and manufacturers' specifications

2.3 Progressive tolerance calculations are performed, in accordance with workplace procedures, to ensure functional operation of civil structures

2.4 Dimensions are selected to ensure fit of civil components, in accordance with specification requirements

2.5 Civil components are selected from manufacturers' catalogue, in accordance with workplace procedures, to meet specified functions

2.6 Pictorial drawings such as isometrics are produced, as requested, in accordance with workplace procedures and industry standards

3.1 Drawings are checked to ensure that civil structure assembly is possible, in accordance with specification requirements

3.2 Drawings are produced, registered and recorded, in

accordance with workplace documentation procedures

- 3.3** Relevant personnel are notified, and existing drawings and specification sheets are updated, as required

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT419B Perform civil drafting.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT419 Perform civil drafting

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- implementing legislation, industry standards, codes of practice and regulations
- performing drafting of civil structures
- preparing for drafting
- using technical drawings, plans, manufacturers' specifications and manuals
- utilising drafting principles including using civil drawing symbols
- working with computer aided drawing systems and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- civil drawing symbols
- concepts and principles of drafting
- equipment for drawing and computer aided drawing systems
- legislation, industry standards, codes of practice and regulations
- technical drawings, plans, manufacturers' specifications and manuals
- typical arrangements of power production plant

- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT421 Conduct technical inspection of process plant and equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct a technical inspection of process generation plant, equipment and associated infrastructure.

An inspection is an organised examination or formal evaluation of power generation plant and equipment, it includes verifying compliance with technical specifications, taking measurements and performing tests.

Competency in this unit requires the ability to prepare for an inspection of power generation plant, inspection of power generation plant, analysing inspection results and updating documentation. Individuals will, in general, work as a maintenance operative in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT351 Test and commission electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for inspection process plant

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Short term maintenance and operating history is identified and obtained from authorised personnel
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications and workplace procedures are reviewed in preparation for work
- 1.3** Deviations from normal operational parameters of process plant, equipment and associated infrastructure are identified
- 1.4** Potential options for cause of deviations are established, in accordance with workplace procedures
- 1.5** Needs and outcomes of process plant inspections or testing are defined, in accordance with workplace procedures
- 1.6** Method sheets, check sheets and isolation instructions are obtained, in accordance with workplace procedures

	1.7	Technical procedures are reviewed and adapted, as required, in accordance with workplace procedures
2 Inspect process plant	2.1	Process plant is correctly identified, in accordance with workplace procedures
	2.2	Process plant's operational status is identified, in accordance with workplace procedures
	2.3	Inspection work is carried out, in accordance with workplace procedures, legislative requirements and industry standards
	2.4	Inspection methods are followed, in accordance with workplace procedures
	2.5	Relevant documentation is completed, in accordance with workplace procedures
	2.6	Additional tests or inspections are identified, in accordance with workplace procedures
	2.7	Process plant and/or equipment is left in a safe condition, in accordance with workplace procedures
	2.8	Process plant and/or equipment availability is declared, in accordance with workplace procedures
	2.9	Specialist assistance is sought, in accordance with workplace procedures, during a technical inspection
3 Analyse inspection results	3.1	Testing and inspection results are analysed
	3.2	Causes for deviations from normal operation are identified
4 Prepare remedial action plan	4.1	Action plan is prepared for any required remedial action on process plant, equipment and associated infrastructure
	4.2	Remedial action is checked for implementation effectiveness, in accordance with workplace procedures
5 Update documentation	5.1	Records and documentation is updated, in accordance with legislative requirements, industry standards and workplace procedures
	5.2	Testing and inspection results, including reports are forwarded to designated personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT421B Conduct technical inspection of process plant and equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT421 Conduct technical inspection of process plant and equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- analysing inspection results
- analysing with data analysis techniques and tools
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- comparing components against drawings, manuals and modules
- determining power generation operating parameters and process plant status
- identifying abnormal power generation plant operating conditions including process plant
- implementing legislation, industry standards, codes of practice and regulations
- inspecting process plant
- locating process plant and equipment at worksite
- meeting permit to work requirements
- organising a remedial action plan
- preparing for inspection
- recognising worn, damaged or seized components
- updating documentation using recording procedures
- using manufacturers' specifications and manuals
- utilising testing and inspection techniques
- working with Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS)

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data analysis techniques and tools
- inspection and test procedures
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- power generation plant operating parameters including process plant
- process plant and equipment, its location and operation
- process plant status
- Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS)
- test equipment
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures
- worn, damaged or faulty process plant and equipment

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry

- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT422 Conduct performance testing on process plant and equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct performance testing on process plant and equipment.

Performance testing is used to determine how power generation plant and equipment performs in terms of responsiveness and stability under specified workloads. It can also serve to investigate, measure, validate or verify other attributes such as scalability, reliability and resource usage.

Competency in this unit requires the ability to plan and prepare for performance tests, undertake performance tests and collect data, evaluate and analyse information and complete documentation. Individuals will, in general, work as a maintenance operative in a power generation facility.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT351 Test and commission electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for performance test

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work request is received and appropriate method of testing is determined, in accordance with legislative requirements, industry standards and workplace procedures
- 1.2** Safety and process plant issues are identified, in accordance with workplace procedures
- 1.3** Specialist assistance and personnel are arranged, in accordance with workplace procedures
- 1.4** Tools and equipment are identified and acquired, in accordance with workplace procedures
- 1.5** Test equipment is calibrated as specified in industry standards, manufacturers' specifications and workplace procedures
- 1.6** Performance test requirements are determined and planned, in accordance with manufacturers' specifications and workplace procedures

	1.7	Process plant is identified and its' status prior to the test is established, in accordance with workplace procedures and from appropriate personnel
	1.8	Authority to carry out work is obtained, in accordance with workplace procedures, process plant operating conditions and load requirements
2 Undertake performance test and collect data	2.1	Process plant is coordinated to initial operating state, ready for testing, in accordance with workplace procedures
	2.2	Performance tests and data collection are undertaken using appropriate techniques that ensure personnel safety and process plant integrity
	2.3	Performance tests are carried out, in accordance with workplace procedures
	2.4	Data is collected, in accordance with workplace procedures
	2.5	Performance test results are evaluated to accurately assess performance of process plant
	2.6	Process plant availability is declared, on completion of tests, in accordance with workplace procedures
3 Evaluate and analyse information	3.1	Process plant efficiency is evaluated, and analysed, in accordance with workplace procedures using data collected
	3.2	Process plant performance is measured against criteria or specifications, in accordance with workplace procedures
	3.3	Cause of abnormal process plant performance is identified by analysing technical and operational information
	3.4	Process plant integrity is maintained through consultation with appropriate personnel and reference to technical and operational documentation
	3.5	Performance test data is critiqued and validated, referencing technical information and applicable test procedure documentation
4 Complete documentation	4.1	Information and data is collated, in accordance with

workplace procedures

- 4.2 Reports and documentation are produced, in accordance with workplace procedures
- 4.3 Reports and documentation are presented to appropriate personnel, in accordance with workplace procedures, to facilitate implementation of recommendations

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT422B Conduct performance testing on process plant and equipment

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT422 Conduct performance testing on process plant and equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing documentation including writing reports
- determining permit to work requirements
- determining process plant performance
- evaluating and analysing data using data analysis techniques and tools
- identifying process plant status and operating parameters
- implementing legislation, industry standards, codes of practice and regulations
- planning and preparing for performance test
- producing reports and completing documentation
- recording, analysing and using data
- undertaking performance test and collecting data
- using manufacturers' specifications and manuals
- utilising performance testing and data collection techniques

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- evaluation and analysis methods and techniques

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- performance tests and data collection techniques
- permit to work system
- process plant and equipment, its location and operation
- process plant operating parameters and performance characteristics
- report and documentation requirements
- typical arrangements of power production plant including operating parameters
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT425 Maintain complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct maintenance of complex instrumentation equipment including, but not limited to, multi-loop equipment such as signal characterising, analogue control equipment, microprocessor controls such as programmable logic, laboratory and industrial analysers, ultrasonic and nucleonic equipment.

Maintenance is an essential part of the ongoing care and upkeep of complex instrumentation equipment that is used to measure, monitor, automate and control processes and equipment in a power generation facility.

Competency in this unit requires the ability to plan work, carry out complex instrumentation equipment maintenance and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEPMNT356 Maintain instrumentation equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Carry out complex instrumentation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

- 2.1** Isolations are confirmed, where appropriate, in

equipment maintenance	accordance with workplace procedures
2.2	Complex instrumentation equipment is maintained, in accordance with workplace procedures, plans, drawings and manuals
2.3	Calibration or adjustments are carried out, in accordance with workplace procedures, to ensure equipment operates safely within requirements
2.4	Maintenance, calibration or adjustments are carried out, in accordance with workplace procedures, without loss or damage to other equipment
2.5	Final inspection is carried out, in accordance with workplace procedures
3 Complete work	
3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
3.2	Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT425B Maintain complex instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT425 Maintain complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out maintenance using maintenance techniques and procedures
- communicating with personnel
- completing work and finalising completion details
- determining permit to work requirements
- implementing regulations, industry standards, codes of practice and legislation
- installing electronic instrumentation equipment
- interpreting manufacturers' specifications and manuals
- performing tests with test and measurement instruments
- planning for maintenance of complex instrumentation equipment work
- selecting materials
- using tools and equipment
- utilising instrument calibration techniques
- working with data analysis techniques and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- complex instrument equipment

- equipment and materials
- installing electronic instrumentation equipment
- instrument calibration techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, its location and operation
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT427 Diagnose and repair faults in complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake the diagnosis and repair of complex instrumentation configuration including, but is not limited to signal characterising equipment, totaliser units, microprocessor control and interface equipment, laboratory and field analysers, ultrasonic and nucleonic equipment.

Diagnosing and repairing complex electronic instrumentation equipment that is used to measure, monitor, automate and control processes and equipment in a power generation facility includes the inspection, testing and verification of operational efficiency to identify possible repairs.

Competency in this unit requires the ability to plan work, verify complex electronic instrumentation equipment faults, find complex electronic instrumentation equipment faults, diagnose complex electronic instrumentation equipment faults, repair complex electronic instrumentation equipment faults and to report on all completed tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEPMNT356 Maintain instrumentation equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

2 Diagnosing complex instrumentation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
1.2	Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
1.3	Resources are obtained and inspected for compliance with job specification
1.4	Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
1.5	Correct materials and components are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
1.6	Work is planned, sequenced and prioritised, in accordance with workplace procedures
1.7	Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
1.8	Work area is prepared, in accordance with workplace procedures
2.1	Normal performance and function of complex instrumentation equipment is ascertained, in accordance

equipment fault	with workplace procedures
	2.2 Fault indicators, technical information and diagnostic techniques are used to verify reported faults in accordance with workplace procedures
	2.3 Faults are reproduced and monitored, if possible, in accordance with workplace procedures
3 Find complex instrumentation equipment fault	3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	3.2 Complex instrumentation equipment components, wires, cables, terminations and support fixings are inspected, in accordance with workplace procedures, for faults
	3.3 Fault finding or diagnostic techniques are selected and used, in accordance with workplace procedures
	3.4 Components are disconnected to enable accurate test measurements of suspected faulty components, in accordance with workplace procedures, without back feed readings occurring
	3.5 Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' specifications
4 Determine cause of complex instrumentation equipment fault	4.1 Appropriate personnel are consulted, if required, in accordance with workplace procedures
	4.2 Information from fault indicators and maintenance records are used, in accordance with workplace procedures
	4.3 Conclusions about the nature and cause of the complex instrumentation equipment fault are based on an analysis of available evidence, in accordance with workplace procedures
5 Repair complex instrumentation equipment fault	5.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	5.2 Faulty, worn or damaged components are repaired, in accordance with workplace procedures

- 5.3 Parts and components are selected and replaced, as required, in accordance with workplace procedures and manufactures' specifications
 - 5.4 Components disconnected for testing are reconnected, in accordance with workplace procedures and all terminations are checked to ensure they are electrically and mechanically sound
 - 5.5 All faults are repaired, in accordance with workplace procedures
 - 5.6 Final inspection is performed, in accordance with workplace procedures
- 6 Complete work**
- 6.1 Work is completed and appropriate personnel are notified in accordance with workplace procedures
 - 6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 6.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 6.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT427B Diagnose and repair faults in complex instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT427 Diagnose and repair faults in complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work and finalising completion details
- determining cause of faults using fault finding and diagnostic techniques
- determining permit to work requirements
- finding faults
- identifying and selecting materials
- implementing regulations, industry standards, codes of practice and legislation
- interpreting manufacturers' specifications and manuals
- performing instrument calibration techniques
- planning diagnosing and repairing of faults in complex instrumentation equipment work
- repairing faults
- using tools and equipment
- utilising data analysis techniques and tools
- verifying faults
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes

knowledge of:

- complex instrumentation equipment
- diagnosis and repair of electronic instrumentation equipment plant and equipment, its location and operation
- equipment and material
- fault finding and diagnostic techniques
- instrument calibration techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- repair techniques
- technical drawings and manufacturers' manuals
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT428 Modify complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct modifications of complex instrumentation used in multi-loop configurations including characterising equipment, microprocessor control and interface equipment, as well as laboratory and field analysers, ultrasonic and nucleonic equipment.

Modifications can include any changes which may alter complex electronic instrumentation equipment that is used to measure, monitor, automate and control processes and equipment in a power generation facility from the manufacturers' specifications.

Competency in this unit requires the ability to plan work, carry out modifications to complex electronic instrumentation equipment and to report on all completed tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEPMNT356 Maintain instrumentation equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

2 Carry out complex instrumentation

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures
- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures and site

equipment modifications	requirements
	2.2 Complex instrumentation equipment is modified using appropriate plans, drawings and manuals, in accordance with workplace procedures
	2.3 Modifications are carried out, in accordance with workplace procedures, without damage or loss to other equipment
	2.4 Modified equipment is set up, in accordance with workplace procedures and manufacturers' specifications, to meet operational requirements
	2.5 Final inspection is performed, in accordance with workplace procedures
3 Complete work	3.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
	3.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4 Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT428B Modify complex instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT428 Modify complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carry out modifications using modification techniques and procedures
- communicating with personnel
- completing work and finalising completion details
- determining permit to work requirements
- identifying and selecting materials
- implementing regulations, industry standards, codes of practice and legislation
- interpreting manufacturers' specifications and manuals
- modifying complex instrumentation equipment
- planning for modification of complex instrumentation equipment work
- using tools and equipment
- utilising data analysis techniques and tools
- working with test and measurement instruments

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- instrumentation practices

- isolations
- layout of generation plant and operation of equipment
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- modification techniques
- modifying complex instrumentation equipment
- permit to work system
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT430 Test and commission complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to conduct testing and commissioning of complex instrumentation used in multi-loop configurations, including but not limited to, laboratory and field analysers, totaliser units, signal characterising, microprocessor control, interface, ultrasonic and nucleonic equipment.

Commissioning and testing ensures that all complex instrumentation equipment, which is used to measure, monitor, automate and control processes in a power generation facility are working efficiently and meeting operational requirements.

Competency in this unit requires the ability to plan work, test complex instrumentation equipment wiring systems, test complex instrumentation equipment piping and tubing systems, test complex instrumentation equipment, commission complex instrumentation equipment and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEPMNT359 Test and commission instrumentation systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace and site procedures

2 Test wiring systems

- 2.1** Isolations for work are confirmed, where appropriate, in accordance with workplace procedures

- 2.2 Wiring systems are tested, in accordance with workplace procedures, plans, drawings and manuals
 - 2.3 Wiring systems, including enclosures and supports, are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects and deterioration
 - 2.4 Fixed wiring is tested, in accordance with workplace procedures and results are documented to confirm compliance with job specification
- 3 **Test piping and tubing systems**
 - 3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2 Piping and tubing systems are tested, in accordance with workplace procedures, plans, drawings and manuals
 - 3.3 Piping and tubing systems, including enclosures and supports are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects and deterioration
 - 3.4 Fixed piping and tubing is tested, in accordance with workplace procedures and results are documented to confirm compliance with job specification
- 4 **Test equipment**
 - 4.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 4.2 Complex instrumentation equipment is tested, in accordance with workplace procedures, using plans, drawings and manuals
 - 4.3 Test conditions are confirmed and complex instrumentation equipment is inspected, in accordance with workplace procedures to ensure absence of damage, defects or deterioration
 - 4.4 Complex instrumentation equipment is tested, in accordance with workplace procedures, using appropriate techniques
 - 4.5 Complex instrumentation equipment test results are documented to confirm compliance with job specification
- 5 **Commission equipment**
 - 5.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures

- 5.2 Complex instrumentation equipment is commissioned, in accordance with workplace procedures, plans, drawings and manuals
- 5.3 Complex instrumentation equipment is set up, in accordance with workplace procedures, operational requirements and manufacturers' specifications
- 5.4 Testing and monitoring is implemented, in accordance with workplace procedures and the results are monitored and documented to ensure equipment operates to manufacturers' specifications

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT430B Test and commission complex instrumentation equipment.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT430 Test and commission complex instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- commissioning complex instrumentation equipment using commissioning techniques and procedures
- communicating with personnel
- determining permit to work requirements
- finalising work completion details
- implementing regulations, industry standards, codes of practice and legislation
- inspecting and monitoring equipment
- interpreting manufacturers' specifications and manuals
- performing with instrument calibration techniques
- planning for the testing and commissioning of complex instrumentation equipment work
- selecting materials
- testing complex instrumentation equipment
- testing complex instrumentation wiring systems using testing techniques
- testing piping and tubing systems
- using tools and equipment
- utilising test and measurement instruments
- working with data analysis techniques and tools

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- characteristics and operation of complex instrumentation equipment
- equipment and materials
- generation plant and equipment, its location and operation
- instrument calibration techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- test and commission complex instrumentation equipment
- test and commission techniques
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT433 Conduct routine generator electrical maintenance

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to undertake routine generator electrical maintenance tasks. Routine maintenance is the practice of monitoring, inspecting and performing reviews of generator electricals in a power generation facility on a regular basis to ensure the safe and efficient operation of all parts and components.

Competency in this unit requires the ability to plan work, carry out electrical generator inspections, evaluate/analyse inspection results, prepare remedial action plans and update documentation. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT346 Maintain electrical equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control

		measures are selected and implemented, in accordance with workplace procedures
	1.8	Work area is prepared, in accordance with workplace and site procedures
2 Carry out routine generator electrical maintenance	2.1	Isolations are confirmed, where appropriate, in accordance with workplace procedures
	2.2	Generator electricals are maintained, in accordance with workplace procedures, plans, drawings and manuals
	2.3	Final inspection is carried out, in accordance with workplace procedures
.3 Complete work	3.1	Work is completed and appropriate personnel are notified, in accordance with workplace procedures
	3.2	Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures
	3.3	Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
	3.4	Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT433B Conduct routine generator electrical maintenance.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT433 Conduct routine generator electrical maintenance

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- carrying out routine generator maintenance
- communicating with personnel
- completing work as per scheduled requirements
- determining work to permit requirements
- employing test and measurement instruments
- implementing legislation, industry standards, codes of practice and regulations
- performing generator electrical maintenance
- planning for routine generator electrical maintenance work
- selecting materials
- using maintenance techniques and procedures
- utilising data analysis techniques and tools
- working with tools and equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- equipment and materials
- generator types and characteristics

- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance techniques
- manufacturers' specifications and manuals
- permit to work system
- routine generator electrical maintenance plant and equipment, its location and operation
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPMNT440 Diagnose and repair faults in power plant inverter systems

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to diagnose and repair faults in power generation plant inverter systems, including associated accessories, components and wiring systems.

The diagnosis and repair of inverter system faults requires the inspection, repair and verification to ensure that it is working efficiently and meeting operational requirements.

Competency in this unit requires the ability to plan work, verify fault, find fault, determine cause of fault, repair fault and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT366 Maintain power plant inverter systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specifications
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct quantity of materials and components for work are obtained and inspected for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures

- 1.7 Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
 - 1.8 Work area is prepared, in accordance with workplace procedures
- 2 Verify fault**
 - 2.1 Normal performance and function of inverter system equipment is ascertained by consulting appropriate personnel and reference sources, in accordance with workplace procedures
 - 2.2 Fault indicators, technical information and diagnostic techniques are used to verify reported faults, in accordance with workplace procedures
 - 2.3 Faults are reproduced and monitored, if possible, in accordance with workplace procedures
- 3 Find fault**
 - 3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2 Equipment components, wires and terminations are inspected for faults, in accordance with workplace procedures
 - 3.3 Diagnostic techniques are selected and used, in accordance with workplace procedures
 - 3.4 Components are disconnected to enable accurate test measurements of suspected faulty components, without concern of back feed readings, in accordance with workplace procedures
 - 3.5 Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' instructions
- 4 Determine cause of fault**
 - 4.1 Appropriate personnel are consulted to obtain details relating to faulty system, in accordance with workplace procedures
 - 4.2 Use is made of information from fault indicators and maintenance records, in accordance with workplace procedures
 - 4.3 Conclusions about nature and cause of fault are reached from analysis of available evidence, in accordance with workplace procedures

5 Repair fault

- 5.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 5.2** Faulty, worn or damaged components are replaced or repaired, in accordance with workplace procedures
- 5.3** Parts and components are selected and used, in accordance with manufacturers' specifications and workplace procedures
- 5.4** Inverter system components are disconnected for testing and are reconnected having been proven free of faults, and all terminations are then checked to ensure they are electrically and mechanically sound, in accordance with workplace procedures
- 5.5** Faults are repaired, in accordance with workplace procedures
- 5.6** Final inspection is performed, in accordance with workplace procedures

6 Complete work

- 6.1** Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 6.2** Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 6.3** Tools and equipment are maintained and stored, in accordance with workplace procedures
- 6.4** Work completion details are finalised, in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT440A Diagnose and repair faults in power plant inverter systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT440 Diagnose and repair faults in power plant inverter systems

Modification History

Release 2. Minor release to update superseded pre-requisite units.

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining cause of faults using data analysis techniques and tools
- determining permit to work requirements
- finding faults using diagnostic techniques and procedures
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- planning and preparing for diagnosis and repair of faults in power plant inverter systems work
- repairing faults using repair techniques and procedures
- selecting materials
- using manufacturers' specifications and manuals
- utilising test and measurement instruments
- verifying faults using verification techniques

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- diagnostic techniques
- equipment and materials
- generation plant and equipment, its location and operation
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- repair techniques
- test and measurement instruments
- typical arrangements of power production plant
- verification techniques
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEERE0001 Apply environmentally and sustainable procedures in the energy sector

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to apply environmentally sustainable procedures in the energy sector.

It includes identifying and applying sustainable methods of work practice that minimise energy and material usage and to apply energy reduction strategies in the energy sector workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify sustainable work practice

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Activities are planned, prepared and sequenced to ensure work health and safety (WHS)/occupational health and safety (OHS) policies and workplace procedures are followed in accordance with work requirements
1.2	Relevant personnel are consulted to ensure work is

		coordinated effectively with others
	1.3	Materials required for the work are obtained and checked in accordance with workplace procedures and compliance with work requirements
	1.4	Location that activities are to be undertaken is determined from job requirements
	1.5	Workplace environmental risks and resource efficiency issues are identified
2 Apply sustainable work practice	2.1	WHS/OHS policies and workplace procedures for undertaking administrative functions are followed
	2.2	Energy assessment is undertaken in accordance with requirements to implement techniques which produce energy reduction directly or indirectly
	2.3	Approval is obtained for suggested improvements to energy efficient methods and components from relevant person/s before any contingencies are implemented
	2.4	Unplanned events or conditions are responded to in accordance with workplace procedures in a manner that minimises risk to personnel, equipment and environment
	2.5	On-going checks of the quality of the work are undertaken in accordance with established procedures
	2.6	Work is carried out efficiently without unnecessary waste of materials or damage to the surrounding environment while using sustainable work practices which minimise wastage of energy and materials either directly or indirectly
3 Complete workplace documentation	3.1	Documentation/reports are completed to ensure detailed promotional activities requirements are met
	3.2	Suggestions are made to relevant person/s for improvement/s to workplace practices to minimise energy and materials wastage
	3.3	Workplace documentation is completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK142A Apply environmentally and sustainable procedures in the energy sector.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0001 Apply environmentally and sustainable procedures in the energy sector

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) and environmental requirements
- applying sustainable energy principles and work practice in daily work activities
- completing relevant workplace documentation
- coordinating work with others
- identifying and obtaining materials required for work
- identifying environmental risks and resource efficiency issues
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel, equipment and environment
- demonstrating the application of environmental and sustainable procedures in the energy sector, including:
 - undertaking an energy assessment
 - selecting energy efficient methods and components
 - reviewing environmentally and sustainable procedures and documenting suggestions for improvements to relevant person/s
 - obtaining approval from appropriate personnel before any contingencies are implemented.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- sustainable work practices, including:
 - economic benefits of sustainable initiatives
 - effects of neglecting sustainable work practice
 - international and national greenhouse imperatives
 - legislative requirements

- notion of sustainable work practice
- the greenhouse effect - causes and consequences
- the role of regulators and similar bodies
- techniques for reducing carbon produced energy and hence greenhouse gases, including:
 - domestic, commercial and industrial strategies
 - energy efficient retrofits (overview)
 - renewable energy (RE) technologies (overview)
- trade-related technologies and methods
- relevant risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and technology currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0002 Assemble and connect remote area power supplies

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to assemble and connect remote area power supply (RAPS) systems where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing to install RAPS, installing RAPS and completing maintenance work on battery banks and reporting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install RAPS

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements for relevant work area are identified and applied in accordance with workplace procedures
- 1.2** Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Installation of apparatus is prepared in consultation with relevant person/s and sequenced accordingly
- 1.5** Nature and location of the work is determined from documentation or relevant person/s to determine the scope of work
- 1.6** Location/s of apparatus and associated equipment is planned within constraints of the building structure and regulations
- 1.7** Advice on coordinating work with others is obtained from relevant person/s and applied
- 1.8** Material needed for installation work is obtained in accordance with workplace procedures and checked against job requirements
- 1.9** Tools, equipment and testing devices required for the installation work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.10** Preparatory work is checked to ensure no damage has occurred and it complies with requirements

2 Install RAPS

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted within workplace safety procedures
- 2.3** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** Apparatus and associated equipment are installed in compliance with industry technical standards, job specifications and requirements, and with sufficient access to not impact terminations, adjustments and maintenance
- 2.5** Wiring is terminated at apparatus and associated equipment in accordance with manufacturer specifications, functional and regulatory requirements
- 2.6** Methods for dealing with unexpected events are discussed with appropriate person/s and documented in accordance with workplace procedures
- 2.7** Unexpected events are dealt with safely and with approval of authorised person/s
- 2.8** Quality checks of installed apparatus are conducted in accordance with workplace procedures
- 2.9** Apparatus installation is conducted minimising waste of materials, damage to apparatus, circuits, the surrounding environment and services using sustainable energy principles

3 Complete work on RAPS

- 3.1** Workplace risk control measures and procedures are applied
- 3.2** Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3** Final checks that the installed apparatus conforms to requirements are conducted
- 3.4** 'As-installed' apparatus and associated equipment are documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Assembling and connecting RAPS must include at least the following:

- two different systems, including:
 - a generator set
 - a photovoltaic (PV) array
 - at least one similar RAPS system where the battery bank is charged from a wind generator

Exposed voltage is not greater than:

- 50 V a.c., or
- 120 V d.c

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK111A Assemble and connect remote area power supplies.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0002 Assemble and connect remote area power supplies

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- assembling and connecting remote area power supply (RAPS) systems
- accurately placing and securing apparatus
- checking isolation of circuits/machines/systems
- completing relevant reporting
- complying with manufacturer specifications, functional and regulatory requirements
- conducting quality checks
- connecting apparatus and associated equipment
- coordinating work with relevant person/s
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining scope of work from documentation and/or relevant person/s
- determining live electrical testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- reading and interpreting drawings related to apparatus, locations and circuit connections
- maintaining fire integrity.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- RAPS extra-low voltage (ELV) installations, including:
 - documentation, including:
 - records of periodic inspection and testing
 - test results that comply with requirements
 - test results reporting required by authorities
 - methods for providing compliant protection
 - requirements for:
 - installation of wiring and equipment
 - installation planning and selection of equipment
 - testing and verification
- sustainable energy principles.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to assembling and connecting RAPS
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0006 Conduct periodic maintenance of remote area power supply battery banks

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) battery banks where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS battery banks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to conduct periodic maintenance of RAPS battery banks

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
- 1.2** Risk control measures are applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
- 1.5** Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
- 1.6** Materials required for the work are identified and accessed in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain RAPS systems battery banks

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
- 2.3** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** RAPS system battery banks are tested in accordance with relevant workplace procedures

	2.5	Battery bank maintenance, including performance measurements and repairs, is completed safely in accordance with workplace routines and procedures
	2.6	Known types of battery functional faults are identified using fault-finding procedures
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Maintenance and repair work is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.9	Quality checks are conducted in accordance with workplace procedures
3	Complete maintenance work on battery banks and report outcomes	
	3.1	Workplace risk control measures and procedures are applied
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4	Battery bank performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK103A Conduct periodic maintenance of remote

area power supply battery banks.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0006 Conduct periodic maintenance of remote area power supply battery banks

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- measuring and recording specific gravity of electrolyte
- measuring and recording cell voltages
- visually inspecting batteries for low electrolyte levels, electrolyte leakage, and corroded terminals and connections
- topping up low electrolyte levels
- identifying electrolyte leaks
- cleaning corroded terminals and connections and treating with an anticorrosive
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/systems
- coordinating work with relevant person/s and the local community
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) battery banks, including:
 - conducting quality checks.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- RAPS systems battery bank maintenance techniques, including:
 - basic battery maintenance encompassing:

- scope of regular testing, checking and corrective actions
- measurement of specific gravity and voltages of battery cells
- checking and topping up electrolyte levels
- checking for acid leakage, cracks in battery casing, corrosion of battery terminals and connections
- cleaning of terminal connections and treating with an anticorrosive
- battery bank performance measurement
- methods for identification of battery bank faults
- relevant battery manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS battery banks
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) generator sets where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS generator sets.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to conduct periodic maintenance on generator sets

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied
- 1.2** Risk control measures are applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
- 1.5** Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
- 1.6** Materials required for the work are identified and accessed in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain RAPS systems generator sets

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
- 2.3** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** RAPS system generator sets are tested in accordance with relevant workplace procedures
- 2.5** Generator set maintenance, including performance

	measurements and repairs, is completed safely in accordance with workplace routines and procedures
2.6	Known types of generator set functional faults are identified using fault-finding procedures
2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
2.8	Maintenance and repair work is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
2.9	Quality checks are conducted in accordance with workplace procedures
3 Complete maintenance work of generator sets and report outcomes	3.1 Workplace risk control measures and procedures are applied
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4 Generator set performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Maintaining RAPS generator sets must include at least the following:

- two different systems, including:
 - where the generator set is charged from a generator set and a photovoltaic (PV) array and at least one similar RAPS system where the generator set is charged

from a wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK104A Conduct periodic maintenance of remote area power supply generator sets.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- coordinating work with relevant personnel and the local community
- determining live electrical work testing/measurement requirements
- checking isolation of circuits/machines/systems
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) generator sets measuring and recording generator no-load and load voltages
- measuring and recording generator output for three load conditions
- checking drive engine coolant and oil level
- visually inspecting drive engine for coolant and oil leaks
- checking condition of drive engine oil, oil filter and air filter
- identifying need to change drive engine oil, oil filter and air filter
- changing drive engine oil, oil filter and air filter
- topping up low coolant and oil levels
- identifying the cause of any coolant and oil leaks
- reporting all maintenance activities
- dealing with unplanned events.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include

knowledge of:

- RAPS system generator sets maintenance techniques, including:
 - basic generator set maintenance encompassing:
 - checking of radiator and oil level
 - periodic oil change
 - periodic air, oil and fuel filter change
 - maintaining logbooks for maintenance regime
 - generator set performance measurement
 - methods for identification of generator set faults
 - maintenance reporting requirements
 - relevant generator set manufacturer specifications
 - relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
 - relevant WHS/OHS legislated requirements
 - relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS generator sets
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) photovoltaic (PV) arrays where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS PV arrays.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to conduct periodic maintenance on PV arrays

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
- 1.2** Risk control measures are applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
- 1.5** Instructions for coordinating work with relevant personnel and the local community are obtained from relevant person/s and applied
- 1.6** Materials required for the work are identified and accessed in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain RAPS systems PV arrays

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
- 2.3** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** RAPS system PV arrays are tested in accordance with relevant workplace procedures
- 2.5** PV array maintenance, including performance

	measurements and repairs, is completed safely in accordance with workplace routines and procedures
2.6	Known types of PV array functional faults are identified using fault-finding procedures
2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
2.8	Maintenance and repair work are completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
2.9	Quality checks are completed in accordance with workplace procedures
3 Complete maintenance work of PV arrays and report outcomes	3.1 Workplace risk control measures and procedures are applied
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4 PV array performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Maintaining RAPS PV arrays must include at least the following:

- two different systems where the PV array is charged from:
 - a generator set and a PV array
 - a wind generator

Exposed voltage is not greater than:

- 50 V a.c., or
- 120 V d.c

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK105A Conduct periodic maintenance of remote area power supply photo voltaic arrays.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- measuring and recording array no-load and load voltages together with ambient temperature
- measuring and recording array output for three load conditions
- visually inspecting array modules and support structure for physical damage
- visually inspecting array connections and cables
- identifying array defects and faults
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking for damage or de-lamination
- checking isolation of circuits/machines/systems
- cleaning of photovoltaic (PV) modules
- coordinating work with relevant personnel and the local community
- determining live electrical work testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) PV arrays, including maintaining logbooks and maintenance regime.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS systems PV array maintenance techniques encompassing:
 - cleaning of PV modules
 - checking for damage or de-lamination
 - checking of module connections, connecting cable and integrity of the array structure
 - maintaining logbooks and maintenance regime
- relevant RAPS system manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS PV array
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0009 Conduct periodic maintenance of remote area power supply wind generators

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) wind generators where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS wind generators.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to conduct periodic maintenance on wind generators

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
- 1.2** Risk control measures are applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
- 1.5** Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
- 1.6** Materials required for the work are identified and accessed in accordance with workplace procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain RAPS systems wind generators

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
- 2.3** Circuits/machines/plant are isolated in strict accordance with WHS/OHS requirements and workplace procedures
- 2.4** RAPS system wind generators are tested in accordance with relevant workplace procedures
- 2.5** Wind generator maintenance, including performance

- measurements and repairs, is completed safely in accordance with workplace routines and procedures
- 2.6** Known types of wind generator functional faults are identified using fault-finding procedures
- 2.7** Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
- 2.8** Maintenance and repair work are completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
- 2.9** Quality checks are conducted in accordance with workplace procedures
- 3 Complete maintenance work of wind generators and report outcomes**
- 3.1** Workplace risk control measures and procedures are applied
- 3.2** Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3** Maintenance issues are referred to the local community in accordance with workplace procedures
- 3.4** Wind generator performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK106A Conduct periodic maintenance of remote area power supply wind generators.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0009 Conduct periodic maintenance of remote area power supply wind generators

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- measuring and recording generator no-load and load voltages
- measuring and recording generator output for three load conditions
- visually inspecting generator and support structure for physical damage
- visually inspecting generator connections and cables
- identifying generator defects and faults
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/system
- coordinating work with relevant personnel and the local community
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) wind generators.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- RAPS systems wind generator maintenance techniques, including:
 - wind generator minor maintenance encompassing:
 - checking the integrity of support structure
 - tension of stay wires
 - visual inspection of wind generator operation

- maintaining logbooks and maintenance regime
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to conducting periodic maintenance of RAPS wind generators
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0017 Maintain and repair facilities associated with remote area essential service operations

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair facilities associated with remote area essential service operations.

It includes preparing for, conducting, completing and reporting on maintenance and repair of facilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

or

UEECD0042 Solve problems in ELV single path circuits

UEECD0044 Solve problems in multiple path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to maintain and repair facilities

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power supply (RAPS) plant are identified and applied in accordance with workplace routines and procedures
- 1.2** Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of service facilities are obtained from documentation or from relevant person/s to determine the scope of work
- 1.5** Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
- 1.6** Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain and repair facilities

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.2** Facilities are checked to identify deterioration and damage in accordance with workplace procedures

	2.4 Faulty and damaged facilities are repaired in accordance with workplace procedures 2.5 Maintenance and repairs are carried out safely and within the prescribed limits, routines and procedures 2.6 Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures 2.7 Maintenance and repair work is conducted minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services 2.8 Quality checks are conducted in accordance with instructions and workplace procedures
3 Complete maintenance and repair work report	3.1 Workplace risk control measures and procedures are applied 3.2 Worksite is cleaned and made safe in accordance with workplace procedures 3.3 Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures 3.4 Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK117A Maintain and repair facilities associated

with remote area essential service operations.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0017 Maintain and repair facilities associated with remote area essential service operations

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two different remote area essential service operations and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/systems
- completing maintenance and repairs
- completing relevant documentation/reporting
- conducting quality checks
- coordinating work with relevant person/s
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining scope of work from documentation and/or relevant person/s
- identifying and accessing materials, tools, equipment and testing devices
- identifying deterioration and damage to facilities
- identifying maintenance issues beyond the scope of work and notifying relevant person/s
- maintaining and repairing remote area essential service operations facilities
- preparing for maintenance and repair work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- maintenance of remote area essential services facilities, including:
 - repair and maintenance of:
 - fences and gates

- windows
- function/s of relevant electrical components
- basic mathematical operations
- electrical safety procedures
- essential services facilities - lighting
- essential services facilities - safety and security and emergency checks
- firefighting equipment and operation
- generation and distribution of electricity
- identification and reporting of faulty electrical components
- maintenance painting
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining and repairing facilities associated with remote area essential service operations
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0018 Maintain and repair remote area power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair remote area power generation facilities.

It includes preparing for, conducting and reporting on maintenance and repair of remote area power generation facilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEERE0023 Work safely with remote area power supply systems

UEERE0007 Conduct periodic maintenance of remote area power supply generator sets and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to maintain and repair remote area power generation facilities

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power generation facility are identified and applied in accordance with workplace routines and procedures
- 1.2** Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** Nature and location of remote area power station facility is obtained from documentation or from relevant person/s to determine the scope of work
- 1.5** Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
- 1.6** Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
- 1.7** Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety

2 Maintain and repair remote area power generation facilities

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.2** Inspection repairs, replacements and/or adjustments are completed on items listed in the maintenance schedule and in accordance with workplace procedures
- 2.3** Fuel, coolant, oil and other fluid spills are cleaned and area made safe in accordance with workplace procedures

	2.4	Batteries are serviced and/or replaced as specified in the maintenance schedule and in accordance with workplace procedures
	2.5	Consumables are removed and disposed of in accordance with environmentally safe procedures
	2.6	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.7	Quality checks are conducted in accordance with instructions and workplace procedures
3	Report maintenance and repair of remote area power generation facilities	
	3.1	Workplace risk control measures and procedures are applied
	3.2	Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures
	3.3	Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK116A Maintain and repair remote area power generation facilities.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0018 Maintain and repair remote area power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- understanding the location and nature of the work required
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- determining scope of work from documentation and/or relevant person/s
- identifying and accessing materials, tools, equipment and testing devices
- coordinating work with relevant person/s
- checking isolation of circuits/machines/systems
- correctly inspecting, repairing, replacing and adjusting items listed in the maintenance schedule
- maintaining and repairing remote area power generation facilities
- servicing batteries and battery packs in a community power station
- cleaning fluid spills appropriately
- removing and disposing of consumable following environmentally safe procedures
- conducting quality checks
- dealing with unplanned events
- applying environmentally safe work practices
- completing relevant documentation/reporting.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- remote area essential services power plant, including:
 - minor service and maintenance procedures of diesel-powered generation equipment in accordance with a prepared schedule encompassing:
 - types and grades of inspections, repairs, replacement and/or adjustments under a maintenance schedule:
 - replacement items/materials, including engine oil, oil filters, fuel filters, engine

- coolant system filters, air cleaners and fan belts
- inspection and repair items, including leakages from fuel system, coolant system and lubricating oil system
- cleaning of fluid spills
- environmentally safe procedures for removal and disposal of consumables
- servicing batteries and battery packs in a community power station in accordance with the prepared maintenance schedule encompassing:
 - hazards associated with batteries
 - types of batteries and their application in a community power station (starting battery set and switchboard (nicad) batteries)
 - battery maintenance techniques
- schedule regular servicing and maintenance encompassing:
 - engine oil and filter changes
 - fuel filters
 - coolant filters
 - water trap devices
 - drive belt (condition/adjustment)
 - valve adjustments (if applicable)
 - major and minor mechanical servicing by outside agents
 - air cleaner (both dry paper and oil bath types)
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations

- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining and repairing facilities associated with remote area essential service operations
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0019 Maintain safety and tidiness of remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain the safety and tidiness of remote area power supply (RAPS) systems.

It includes preparing to maintain safety and tidiness of RAPS system equipment, completing work and reporting issues.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEERE0023 Work safely with remote area power supply systems

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to maintain safety and tidiness of RAPS system

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/ occupational health and safety (OHS) requirements and workplace procedures for relevant work area are identified and applied

1.2 Risk control measures are applied in accordance with

- workplace procedures prior to commencing work
- 1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
 - 1.4 Nature and location of the RAPS system is identified from work schedule and relevant person/s to determine the scope of work
 - 1.5 Advice on coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
 - 1.6 Tools and equipment required for cleaning work are obtained and checked for correct operation and safety
- 2 Maintain RAPS system**
- 2.1 Workplace risk control measures and procedures are applied
 - 2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
 - 2.3 Circuits/machines/system are isolated in accordance with WHS/OHS requirements and workplace procedures
 - 2.4 RAPS system and area are cleaned in accordance with workplace procedures
 - 2.5 Cleaning is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
 - 2.6 Quality checks are conducted in accordance with workplace procedures
- 3 Complete work and report outcomes**
- 3.1 Workplace risk control measures and procedures are applied
 - 3.2 Cleaning and tidiness issues are reported to the local community in accordance with workplace procedures
 - 3.3 Cleaning work is completed and issues are reported to relevant person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

RAPS system must incorporate a battery bank and at least two of the following:

- generator set
- photovoltaic (PV) array
- RAPS system
- wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK101A Maintain safety and tidiness of remote area power supply systems.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0019 Maintain safety and tidiness of remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- removing non-remote area power supply (RAPS) equipment
- safely removing insects, spiders and any animals
- safely removing dust and dirt from floors and equipment
- identifying and reporting at least two safety issues
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including:
 - applying relevant risk identification, assessment, reporting and control requirements
 - checking isolation of circuits/machines/system
- completing reporting requirements to relevant person/s and local community
- conducting quality checks
- coordinating work with relevant person/s and the local community
- determining live testing/measurement requirements
- maintaining safety and tidiness of RAPS system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS plant area cleaning, and maintaining RAPS systems, including:
 - need for a clean and tidy plant area
 - RAPS system components and associated equipment and their location within the plant area
 - manual fuel pump, if available
 - plant cleaning techniques:
 - fuel and oil

- acid spills
- removal of dust, insects, spiders and animals
- removal of non-RAPS equipment
- techniques for reporting and dealing with cleaning issues
- relevant safe work method statements (SWMS) or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures, including reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining safety and tidiness of a RAPS system
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0020 Promote sustainable energy practices in the community

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to promote sustainable energy practices in the community.

It includes identifying and promoting sustainable energy practices to others in the community.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify sustainable energy practice

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work activities are identified, planned and sequenced to ensure work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace policies and procedures are followed
- 1.2** Relevant person/s is consulted to ensure work is coordinated with others

	1.3	Materials are obtained and checked in accordance with workplace procedures and to comply with job requirements
	1.4	Work activities are determined from job requirements
	1.5	Materials necessary to complete work are obtained in accordance with workplace procedures and checked against job requirements
2 Promote sustainable energy practice	2.1	WHS/OHS policies and procedures for undertaking administrative functions are followed
	2.2	Work activities are performed in accordance with job requirements and workplace procedures without damaging the surrounding environment or services
	2.3	Unplanned events are responded to in accordance with workplace procedures and approval of authorised person/s
	2.4	Approval is obtained in accordance with established procedures from appropriate person/s before contingencies are implemented
	2.5	Quality checks of work are undertaken in accordance with workplace procedures
3 Complete the promotion of sustainable energy	3.1	Documentation/reports are completed to ensure promotional activity requirements are met
	3.2	Work completion is communicated to relevant person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Promoting sustainable energy practices in the • appliances

community must include at least one of the following disciplines:

- business equipment
- computers
- data communications
- electrical
- electrical machines
- electronics
- fire protection
- instrumentation
- refrigeration and air conditioning
- renewable/sustainable energy
- security technology

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK114A Promote sustainable energy practices in the community.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0020 Promote sustainable energy practices in the community

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- applying sustainable energy practice in the community
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- checking work quality
- completing the promotion of sustainable energy
- determining location of work activities
- documenting promotional work activities after completion
- identifying and promoting sustainable energy practices
- obtaining and checking materials using sustainable energy practices.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- greenhouse reduction strategies, including:
 - greenhouse gas emissions profile encompassing:
 - goals and principles of the National Greenhouse Strategy (NGS)
 - what a greenhouse gas inventory is, why it is required, and the sectors to which it applies
 - uses to which the National Greenhouse Gas Inventory can be applied
 - climate change and its impacts encompassing:
 - the possible impact of climate change in Australia
 - techniques for improving the understanding of climate change
 - techniques for communicating to and educating the general public on greenhouse gas induced climate change

- partnerships for greenhouse action encompassing:
 - actions achievable by each level of government to implement the NGS
 - methods by which the community activity can be engaged in the reduction of greenhouse gas emissions
 - initiatives that can be undertaken by the private sector to reduce greenhouse gas emissions
 - advantages of international partnerships
 - emissions trading system
- efficient and sustainable energy use and supply encompassing:
 - techniques for reducing the greenhouse intensity of energy supply
 - types of renewable energy (RE) sources suitable for use in Australia
 - methods and technique for improving end-use efficiency
- efficient transport and sustainable urban planning encompassing:
 - how integrating land use and transport planning can assist the greenhouse problem
 - how each of the following can be used to mitigate greenhouse gas; travel demand and traffic management strategies; encouraging greater use of public transport, walking and cycling; freight and logistics systems; improving vehicle fuel efficiency and fuel technologies
- greenhouse sinks and sustainable land management encompassing:
 - how enhancing greenhouse sinks and encouraging sustainable forestry and vegetation management can complement the AGS
 - how greenhouse gas emissions are obtained from agricultural production and describe techniques to mitigate the emissions
- models of greenhouse best practice in industrial processes and waste management encompassing:
 - types and methods of reducing greenhouse gas emissions from industry
 - methods of reducing methane emissions from waste treatment and disposal
- adaptation to climate change encompassing:
 - salient points in each of the key sectors that require analysis and the strategies required in the need for adaptation to climate change
- quality assessments
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant promotional materials
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to provide sustainable energy solutions for energy reduction in residential premises.

It includes preparing for and conducting monitoring of energy usage and providing solutions for energy reduction. It also includes completing monitoring activities and reporting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

- 1 Prepare to monitor energy usage and provide solutions for energy reduction**

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Monitoring activities are planned and prepared in accordance with work health and safety (WHS)/occupational health and safety (OHS) policies and workplace procedures and work is sequenced in accordance with requirements

	1.2	Relevant person/s is consulted to ensure work is coordinated effectively with others
	1.3	Materials are obtained and checked in accordance with workplace procedures and job requirements
	1.4	Location of monitoring activities is determined from job requirements
2 Undertake monitoring of energy usage and provide solutions for energy reduction	2.1	WHS/OHS policies and procedures for monitoring activities are applied
	2.2	Monitoring activities are conducted in accordance with requirements without damage or distortion to the surrounding environment or services
	2.3	Sustainable energy options are determined from energy consumption monitoring activities, measurements and calculations
	2.4	Unplanned events or conditions are responded to in accordance with workplace procedures
	2.5	Approval is obtained from relevant person/s before any energy reduction solutions are implemented in accordance with workplace procedures
	2.6	Quality checks are conducted in accordance with workplace procedures
3 Complete monitoring activities and report	3.1	Documentation/reports are completed in accordance with administrative requirements
	3.2	Relevant person/s is notified of work completion in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK112A Provide basic sustainable energy solutions for energy reduction in residential premises.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0021 Provide basic sustainable energy solutions for energy reduction in residential premises

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- providing basic sustainable energy solutions for energy reduction in domestic premises
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- applying sustainable energy principles and practices
- completing relevant reporting
- conducting monitoring activities of energy usage
- completing quality checks
- coordinating work with relevant person/s
- identifying and accessing materials, tools, equipment and testing devices
- measuring and calculating energy consumption values in accordance with relevant industry standards
- preparing to monitor energy usage.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- concepts of renewable energy (RE), including:
 - non-technical issues encompassing:
 - current economic, social, environmental and political issues impacting on RE technology
 - energy services/demand encompassing:
 - terminology
 - energy, power, temperature, symbols and units
 - energy conversion and efficiency

- domestic dwelling: energy services and energy demand of individual appliances
- energy efficient appliances
- primary energy and end-use energy
- embodied energy
- solar radiation resource encompassing:
 - terminology
 - units, symbols and conversions
 - sun path diagrams
 - solar contour maps
 - solar window
- solar thermal systems encompassing:
 - terminology
 - components
 - applications
 - types of hot water systems
- photovoltaic (PV) arrays encompassing:
 - terminology
 - current, voltage and power
 - modules: types, efficiency and applications
 - I-V curve
 - irradiance and temperature effects
 - array configurations
- wind energy resource and technology encompassing:
 - terminology, units and symbols
 - wind speed, direction, turbulence, wind and power
 - vertical wind speed profile (wind shear)
 - local terrain roughness
 - isovent maps
 - measuring instruments
 - wind energy conversion systems (WECS)
 - terminology
 - characteristics
 - applications
- micro-hydro resource and technology encompassing:
 - terminology, units and symbols
 - flow rate, head and assessment
 - turbine types and applications
- stand-alone power system configuration encompassing:
 - basic configuration series systems
 - components: functions, efficiencies, regulators, inverters, battery chargers and

generators

- relevant industry standard energy consumption measurements and calculations
- sustainable energy solutions for energy reduction in residential premises
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to providing basic sustainable energy solutions for energy reduction in residential premises
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0023 Work safely with remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to work safely on remote area power supply (RAPS) systems.

It includes preparing to enter a RAPS system, applying safe working practices, and following workplace procedures for hazard identification and risk control in RAPS system areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to enter a RAPS system

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1	Hazards/risk control procedures for RAPS systems maintenance are identified and applied
1.2	System access permit is obtained from relevant person/s
1.3	Preparation for electrical and non-electrical isolation is completed in accordance with workplace procedures

	1.4	Tools and equipment required for work are checked for safety and correct functionality in accordance with workplace procedures
2	Apply safe working practices in RAPS system area	
	2.1	Workplace risk control measures and procedures are applied
	2.2	Safe work practices for RAPS system are applied in accordance with workplace procedures
	2.3	Circuits/machines/system are isolated in accordance with work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures
	2.4	Safe work practices in RAPS system are applied in accordance with workplace procedures
	2.5	Safe working practices are applied minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.6	Quality checks are conducted in accordance with workplace procedures
3	Follow workplace procedures for hazard identification and risk control in RAPS system areas	
	3.1	Risks/hazards are identified, assessed and control measures implemented and monitored through consultation with relevant person/s and the local community
	3.2	Workplace hazards are identified and reported to relevant person/s in accordance with workplace procedures
	3.3	WHS/OHS incident reports are completed in accordance with regulatory requirements and workplace procedures
	3.4	Instructions and training are applied in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Working safely with RAPS system must include at least the following:

- two different systems incorporating the following:
 - battery bank
 - generator set
 - photovoltaic (PV) array
 - one RAPS system with the addition of a wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK102A Work safely with remote area power supply systems.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0023 Work safely with remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- preparing to enter the remote area power supply (RAPS) system including, permission to enter the area and to isolate RAPS equipment
- applying work procedures and instructions as they apply to risk control measures
- dealing with accidents and emergencies
- participating in consultation processes, identifying hazards and implementing and monitoring control measures
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices in RAPS system, including:
 - completing WHS/OHS incident reports
- conducting RAPS system quality checks
- obtaining and inspecting tools and equipment and reporting faults
- preparing for and checking isolation of circuits/machines/systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS safe working practices, including:
 - general safety encompassing:
 - general safety
 - risk assessment
 - personal protective equipment (PPE)
 - WHS/OHS procedures
 - RAPS safety and risk assessment encompassing:
 - types of hazards in and around RAPS:

- rotating machines
- fuels and oils
- exhaust fumes
- acids and flammable gases from batteries
- measures for dealing with hazards in and around RAPS
- purpose and methods for isolation and de-energisation of power supplies
- correct isolation and de-energisation procedures encompassing:
 - processes for preventing generator from automatically starting
 - isolating photovoltaic (PV) arrays
 - isolating wind driven generators
 - isolating battery
 - isolating inverter power sources
- safety signage encompassing:
 - types of signs
 - location
 - condition
 - suitability
- access to system encompassing:
 - methods for limiting access to plant areas
- reporting
- access to RAPS, including:
 - obtaining access permit/s
- relevant manufacturer specifications
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry

- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to carry out repairs to renewable energy (RE) apparatus.

It includes preparing to repair RE apparatus, repairing RE apparatus, completing and reporting on repair activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Those holding an ‘Unrestricted Electrician’s Licence’ or equivalent issued in an Australian state or territory meet the prerequisite requirements of this unit.

Pre-requisite Unit

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

and

UEECD0025 Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits

or

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to repair RE apparatus

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and procedures for relevant work area are identified and applied in accordance with workplace procedures
 - 1.2** Risk control measures are applied in accordance with workplace procedures prior to commencing work
 - 1.3** Nature of repair is obtained from documentation or relevant person/s to determine the scope of work
 - 1.4** Instructions for coordinating work with others are obtained from relevant person/s and applied
 - 1.5** Materials required for the work are identified and accessed in accordance with workplace procedures
 - 1.6** Tools, apparatus and testing devices required for work are obtained and checked for correct operation and safety
-
- 2.1** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
 - 2.2** Circuits/apparatus are isolated in accordance with WHS/OHS requirements and workplace procedures
 - 2.3** Apparatus is dismantled in accordance with manufacturer guides and instructions from relevant person/s
 - 2.4** Component parts are tagged during dismantling to ensure correct and efficient reassembly and stored to protect against loss or damage
 - 2.5** Apparatus is assembled in required sequence with all parts placed, secured and connected in accordance with manufacturer guides or industry practice
 - 2.6** Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures

2 Repair RE apparatus

	2.7	Repairs are completed minimising waste of materials, damage to apparatus, the surrounding environment and services applying sustainable energy practices
3 Complete and report repair work activities	3.1	Repaired apparatus is prepared for testing by relevant person/s
	3.2	Work area is cleaned and made safe in accordance with workplace procedures
	3.3	Relevant person/s is notified of repair work completion in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Repairs must include the following:

- RE apparatus limited to replacement or repair of components in which the fault has been previously determined

Carrying out repairs to RE apparatus must include the following:

- two different RE apparatus in which three different types of components are faulty, one of which is mechanical

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK123A Carry out basic repairs to renewable energy apparatus.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0025 Carry out basic repairs to renewable energy (RE) apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- following manufacturer service instructions for access to components
- removing at least three different types of components specified in the work instructions
- replacing components to manufacturer requirements
- reassembling the apparatus correctly
- testing apparatus operation
- dealing with unplanned events
- applying relevant risk identification, assessment, reporting and control requirements
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- carrying out repairs to renewable energy (RE) apparatus, including:
 - completing and reporting on repair work
 - determining scope of repair work
- checking isolation of circuits/machines/systems
- coordinating work with relevant person/s
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RE technologies, including:
 - major non-technical issues encompassing:
 - impact of economic, social, environmental and political issues on the use of RE technologies
 - how each of the non-technical issues impact on the application of a selected RE

- technology
- energy services and demand encompassing:
 - definition of the terms: energy, power, energy efficiency, end-use energy, primary energy and embodied energy
 - calculation relating to energy, power and time with the appropriate number and time with the appropriate number of significant figures
 - units and symbols for energy, power, time and temperature using standard International System of Units (SI) and prefixes
 - conversion of energy and power quantities from one unit to another using conversion tables
 - the two laws that apply to any energy conversion process
 - efficiency of a simple energy conversion process
 - energy services required by a domestic dwelling
 - power and energy consumption of individual appliances and systems using appropriate meters or other methods
 - calculation of the end use and primary energy required for these energy services
 - selection of the most appropriate energy source for each of these services
 - justification in terms of environmental, economic, social and political constraints
 - selection of appropriate energy efficient appliances and technologies
- solar resource encompassing:
 - definition of the terms: irradiation, latitude, solar constant, direct and diffuse radiation, azimuth and altitude angles, irradiance, solar window, tilt angle, solstice and equinox
 - units and symbols for irradiation and irradiance and the conversion of one unit to another using conversion tables
 - measurement of solar irradiance with a solarimeter
 - solar radiation data tables and contour maps
 - position of the sun for a given date, time and latitude using a sun path diagram
 - times when an obstacle will shade a given collector
 - how radiation varies throughout the year on the surface of a collector which is either fixed, single-axis tracking or double-axis tracking
 - appropriate tilt angles for fixed and seasonally-adjustable collectors at a given latitude and given application
 - calculation of the effect of single-axis tracking and double-axis tracking on collected radiation using radiation data tables
- solar thermal systems encompassing:
 - definition of terms: conduction, convection, radiation, collector heat loss co-efficient, conductivity, specific heat and solar fraction
 - components for a solar thermal system, including collector, storage, reticulation and control
 - solar collector types suitable for low, medium and high temperature applications
 - different types of domestic solar hot water (SHW) systems
 - how the components of thermosiphon and pumped storage systems operate

- heat loss mechanisms in collectors
- stratification in storage tanks
- backup energy systems
- control and protection strategies
- solar fraction of a domestic SHW system with the use of table or nomograms
- energy efficient building design encompassing:
 - definition of terms: thermal comfort, passive system, active system, aspect of the site, orientation of the building and thermal mass
 - the climate factors which affect building design
 - relationship between thermal comfort and climate
 - relationship between the seasonal variation of the sun's path and the heat gain of the building elements (roof, walls, windows and floor)
 - effect of the thermal conductivity of building materials on heat flows to and from the building
 - use of thermal mass in reducing temperature variations within the building
 - use of ventilation
 - thermal performance of a dwelling using both indoor and outdoor hourly temperature measurements over the period of at least one day
 - effect of insulation, glazing, orientation, shading devices, thermal mass and ventilation on the thermal performance of a building
 - an active solar system which could be used in a dwelling to complement passive design features in extreme climates
 - aspects of an existing dwelling that contribute to or detract from thermal performance
- photovoltaic (PV) arrays encompassing:
 - definition of terms: PV cell, module, series, parallel, array, maximum power point (MPP), nominal operating cell temperature (NOCT), short circuit current (ISC), open circuit voltage (VOC), I-V curve, current at maximum power point (IMP) and voltage at maximum power point (VMP)
 - calculations relating to voltage, current and power with the appropriate number of significant figures and using standard SI units and prefixes
 - types of commercially available PV modules, their efficiency and typical applications
 - I-V curve for a typical PV module and label the approximate position of MPP and values of ISC, VOC, IMP and VMP
 - effect of irradiance and temperature on ISC, VOC, IMP and VMP
 - function of blocking and bypass diodes
 - current and voltage of a single module to produce the I-V characteristic curve
 - major specification criteria for a PV module
 - size and configuration of a PV array for a given load and system voltage using tables or nomograms
- wind energy resources encompassing:
 - definition of terms: kinetic energy, specific wind power, vertical wind speed profile, surface roughness, temperature inversion layer, cut in (vC), rated (vR) and furling

(vF) wind

- speeds, rated power (PR), power co-efficient (cP), output co-efficient (cO and tip speed ratio
 - units and symbols for wind speed, specific wind power and air density
 - large scale wind patterns over the Australian continent, their causes and the effect of local terrain on wind speed, direction and turbulence
 - specific wind power for given wind speeds
 - wind speed at different heights above ground level
 - the mean wind speed based on wind speed frequency distribution data in the form of a histogram
 - suitable minimum tower height for a wind energy conversion system (WECS) sited downwind from an obstacle
 - isovent maps
 - types of wind-measuring instruments and the minimum requirements for assessing wind energy at a given site
 - measurement of wind speed and direction
 - characteristics of horizontal axis and vertical axis, upwind and downwind, lift and drag propelled wind turbines
 - power vs. wind speed curve for a typical WECS showing vC, vR, vF, and PR
 - major specification criteria for a WECS
 - sizing a WECS for a given load, efficiency and annual mean wind speed using tables or a nomogram
- micro-hydro system basis encompassing:
 - definition of terms: flow rate, gross or static head, potential energy, net or dynamic head, hydraulic efficiency, micro-hydro system efficiency, equivalent pipe length, reaction turbine and impulse turbine
 - units and symbols for flow rate, head and gravitational constant
 - methods each assessing flow rate and head
 - measurement of stream flow rate and head
 - assessment from contour maps
 - different micro-hydro systems in terms of their physical and operating characteristics
 - major specification criteria for a micro-hydro system for electricity generation
 - suitable type and size of micro-hydro-system for a given load, efficiency, available flow rate and net head using tables or a nomogram
- energy storage encompassing:
 - methods of energy storage
 - energy density of the energy storage methods above by mass and volume
 - definition of the following terms in relation to batteries: nominal voltage, cell, primary and secondary cells, battery, charge and discharge rate, amp hour capacity, watt hour capacity, state of charge (SOC), depth of discharge (DOD), specific gravity (SG), watt hour and amp hour efficiency, and cycle life
 - major features of common types of batteries suitable for stand-alone power systems

- state of charge of a lead-acid battery through measurement of specific gravity or battery voltage using safe working practices
- stand-alone power system basis encompassing:
 - direct current (d.c.) sub-system efficiency
 - block diagram of a typical stand-alone power system
 - function of each stand-alone power system component
 - typical efficiencies of each component
 - major characteristics of different types of commercially available regulators, inverters and battery chargers
- biomass encompassing:
 - definition of terms: biogas, producer gas, biofuels, feedstock, gross and net calorific values
 - biofuels and their specific energy contents
 - method of production of one of these five biofuels, including source of raw material/feedstock, conversion process and yield
 - applications for each of the biofuels
 - assessment of the biomass resource required to meet a particular energy service, e.g. cooking, hot water, space heat, transport, process heat and electricity
 - social, political and economic impact of large-scale use of selected biomass resources
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry

- resources that reflect current industry practices in relation to carrying out repairs to RE apparatus by replacement of components
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0040 Maintain and monitor remote area essential service operations

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain and monitor remote area essential service operations.

It includes preparing to maintain a power station compound, monitoring performance, developing maintenance schedules, completing work and reporting outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEERE0023 Work safely with remote area power supply systems

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to maintain remote area power supply (RAPS) compound and monitor

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power station facility are identified and applied in accordance with workplace routines and procedures

performance

- 1.2 Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
 - 1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
 - 1.4 Nature and location of remote area power station facility is obtained from documentation or from relevant person/s to determine the scope of work
 - 1.5 Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
 - 1.6 Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
 - 1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
 - 1.8 Defective and unsafe tools and service equipment are repaired or replaced in accordance with workplace procedures
- 2 **Maintain RAPS compound and monitor performance**
 - 2.1 Workplace risk control measures and procedures are applied
 - 2.2 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
 - 2.2 Power station building, generating equipment and compound are cleaned and tidied to maintain a safe and efficient plant area in accordance with workplace procedures
 - 2.3 Inspection and reporting are conducted on suitability, location and legibility of safety signage
 - 2.4 Inspection and reporting are conducted on location, suitability and condition of firefighting equipment
 - 2.5 Performance status and fuel and oil use of generation equipment is monitored and logged based on information obtained from instruments, meters and

		measuring devices
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Quality checks are conducted in accordance with instructions and workplace procedures
3	Develop maintenance schedule and complete work report	
	3.1	Workplace risk control measures and procedures are applied
	3.2	Maintenance schedule is developed based on logged information on power station performance status and condition of compound
	3.3	Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures
	3.4	Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK118A Maintain and monitor remote area essential service (RAPS) operations.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0040 Maintain and monitor remote area essential service operations

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- understanding the location and nature of the work required
- following established procedures for repairing or replacing defectives tools and service equipment
- cleaning and tidying remote area power station building, generating equipment and compound effectively
- inspecting and reporting suitability, location and legibility of safety signage
- inspecting and reporting location, suitability and condition of firefighting equipment
- monitoring and logging performance, status and fuel and oil use of generation equipment
- developing an appropriate basic maintenance schedule from logged information
- documenting work activities accurately
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/system
- completing relevant documentation/reporting
- conducting quality checks
- coordinating work with relevant person/s
- determining scope of work from documentation and/or relevant person/s
- identifying and accessing materials, tools, equipment and testing devices
- identifying deterioration and damage to facilities
- identifying maintenance issues beyond the scope of work and notifying relevant person/s
- maintaining and monitoring remote area essential service operations
- preparing to maintain power station compound and monitor performance.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- power station and compound maintenance, remote area power supply (RAPS) compound maintenance and meter reading, including:
 - maintaining clean, tidy and safe condition of the RAPS building and generating equipment encompassing:
 - removal of generating plant oil, coolant and fuel leaks
 - removal fluid spills from plant room floor areas
 - cleaning of RAPS ventilation systems
 - removal of insects and fauna from plant area
 - environmentally safe disposal of used consumables and rubbish
 - repositioning emptied rubbish bins
 - correct storage of plant spares
 - maintaining a clean, tidy and safe working environment of RAPS compound encompassing:
 - repairing and securing compound perimeter fencing and gates
 - removal and environmentally safe disposal of flora from the fence line and plant room perimeter
 - removal and environmentally safe disposal of compound rubbish
 - cutting and watering the compound grassed area
 - safe arrangements for storage of fuel drums and other flammable liquids
 - maintaining water reticulation equipment
 - inspecting, classifying and repairing the RAPS tools and equipment encompassing:
 - inspecting and reporting hand tools and service equipment for serviceability
 - equipment repair procedures
 - cleaning and storage of tools and equipment
 - inspecting and reporting on the safety signage displayed in the RAPS and on the perimeter fence encompassing:
 - types and location of safety signs relevant to a community RAPS and compound
 - reporting on the conditions and suitability of the signs
 - locating, inspecting and reporting on the fixed and portable firefighting equipment contained in and around the power station encompassing:
 - types of firefighting equipment suitable for a power station
 - typical locations of power station firefighting equipment
 - inspecting and reporting suitability and condition of firefighting equipment
 - instruments/meters showing performance/status of community power stations encompassing:
 - types of information displayed on the instrument panel and switchboards (engine oil pressure, coolant temperatures fuel pressure/flow, amperes, voltage, kilowatt, kilowatt hours, frequency, Hertz and engine running hours)
 - instrument/meter reading and recording techniques
 - dip stick measurement and recording methods of bulk fuel and engine oil
 - maintenance schedules from logged information of community power station

performance encompassing:

- logged information
- maintenance schedules, including timely ordering of fuel, coolant and engine oil, engine oil changes, engine oil filter changes, fan belt condition and adjustment, air cleaner element service, minor tune up requirements, valve adjustments and minor and major overhaul work
- instrument/meter reading and maintenance scheduling records
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining and repairing facilities associated with remote area essential service operations
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERE0041 Maintain operation of remote area power generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain operation of remote area power generation plant where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, conducting, completing and reporting on maintenance of power generation plant.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEERE0018 Maintain and repair remote area power generation facilities

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for maintenance

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power generation plant are identified and applied in accordance with workplace procedures

- 1.2 Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
 - 1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
 - 1.4 Nature and location of the power plant are obtained from documentation or from work supervisor to determine the scope of work to be undertaken
 - 1.5 Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
 - 1.6 Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
 - 1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
- 2 **Conduct maintenance work**
 - 2.1 Workplace risk control measures and procedures are applied
 - 2.2 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
 - 2.3 Relevant maintenance procedures are applied to test and check remote area power plant
 - 2.4 Known types of remote area power plant functional faults are identified and repaired in accordance with workplace procedures
 - 2.5 Maintenance performance measurements and repairs are conducted safely in accordance with workplace routines and procedures
 - 2.6 Workplace procedures are applied for referring non-routine events to relevant person/s for directions
 - 2.7 Maintenance and repair work is conducted minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
 - 2.8 Quality checks are conducted in accordance with instructions and workplace procedures

3 Complete maintenance work and reporting	3.1 Workplace risk control measures and procedures are applied
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures
	3.4 Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK120A Maintain operation of remote area power generation plant.

Links

Companion Volume implementation guides are found in VETNet - -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0041 Maintain operation of remote area power generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- understanding the location and nature of the work required
- following prescribed procedures to testing and checking plant
- identifying and repairing known functional faults
- carrying out maintenance and repairs effectively
- identifying maintenance issues beyond the scope of prescribed work and notifying appropriate person/s
- documenting work activities accurately
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/systems
- conducting quality checks
- identifying and accessing materials, tools, equipment and testing devices
- maintaining operation of remote area power generation plant.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- minor servicing of a remote area power generating plant encompassing:
 - engine oil and filters
 - fuel filters
 - coolant filters
 - water trap devices
 - air cleaners
- minor maintenance of a remote area power generating plant encompassing:
 - fan and accessory drive belts

- repair of minor leaks: coolant, oil and fuel
- servicing of a remote area power generating plant battery systems encompassing:
 - starting battery set
 - switchboard (nicad) batteries
- information displayed by the instruments/meters in a remote area power generating plant encompassing:
 - generating equipment (diesel engine)
 - engine lubrication
 - system oil pressure
 - engine cooling system coolant
 - temperature (in and out)
 - fuel pressure
 - current
 - voltage
 - power (kW)
 - kilowatt hours
 - frequency, hertz (Hz)
 - engine running hours
 - station services: fuel tank dip and lubricating oil tank level
 - fuel flow meter
- use of the information gathered from instruments/meters encompassing:
 - ordering of fuel, lubricating oil and coolant
 - scheduling regular servicing and maintenance for engine oil and filter changes, fuel filters, drive belt (condition/adjustment), valve adjustments (if applicable), major and minor mechanical servicing by outside agents and air cleaner (both dry paper and oil bath types)
- power plant log sheets and readings encompassing:
 - completed log sheets
 - forwarding information to appropriate person/location at regular intervals (weekly)
- general cleanliness of the power generating plant and buildings encompassing:
 - generation plant
 - oil leaks
 - water leaks
 - fuel leaks
 - safety awareness
 - plant buildings
 - internal floor area
 - used consumables
 - spare parts storage
 - spider webs and other pests

- rubbish containers
- ventilation
- power station compound
- fence and gate (if applicable)
- weeds
- grass (if applicable)
- rubbish containers
- fuel and oil supply (drums)
- water reticulation (if applicable)
- tools and equipment
- location/storage
- cleanliness
- maintenance
- drain/drip tins
- safety signage
- location
- condition
- suitability
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE)

currently used in industry

- resources that reflect current industry practices in relation to maintaining operation of remote area power generation plant
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to attach flexible cord and plug to electrical equipment for connection to a single phase supplies up to 230 volts (V) alternating current (a.c.) supply.

It includes planning and attaching flexible cord and plug, using test equipment for inspection and safety testing. It also includes locating, inspecting, testing and repairing faults in flexible cords and plugs.

This unit does not cover the knowledge and skills necessary for work associated with high current faults on complex electrical apparatus, circuits and electrical work; in hazardous areas or on electrical equipment that is part of an explosion-protection technique; nor, work associated with fixed wiring.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 V a.c. or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, is required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Restricted Licensing

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan electrical equipment connection

2 Attach flexible cord and plugs

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Work is planned, sequenced and prepared in accordance with WHS/OHS requirements and workplace procedures
- 1.2 Condition and ratings of cord and plugs are in accordance with workplace procedures and work instruction from appropriate person/s
- 1.3 Flexible cords and plugs are selected in accordance with relevant industry standards and workplace procedures for condition and rating
- 1.4 Materials necessary to complete work are obtained and checked in accordance with workplace procedures and work instructions
- 1.5 Tools, equipment and testing devices needed to carry out work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.6 Flexible cord and plugs are prepared without damage to insulation and conductors and in accordance with relevant industry standards
- 2.1 WHS/OHS workplace policies and procedures are followed
- 2.2 Single insulated metal framed equipment is earthed in accordance with relevant industry standards and workplace procedures
- 2.3 Double insulated equipment is inspected and maintained in accordance with relevant industry standards and workplace procedures
- 2.4 Conductors are connected to terminals ensuring required polarity is in accordance with relevant industry standards

3 Inspect and test equipment for operation and safety	3.1 Electrical installation and operation of cord and plug/s connected to electrical equipment are inspected and tested in accordance with relevant industry standards, work instructions and workplace procedures
	3.2 Quality checks of work are undertaken in accordance with workplace procedures
4 Locate and repair fault in flexible cord and plug/s	4.1 Electrical equipment and attached flexible cord and plug/s are isolated in accordance with WHS/OHS requirements and workplace procedures
	4.2 WHS/OHS workplace policies and procedures are followed
	4.3 Quality checks of the attached flexible cord and plug/s are undertaken in accordance with workplace procedures to detect any abnormal, damage or fault
	4.4 Faults in attached flexible cord and plug/s are determined and details of components to be replaced are recorded in accordance with workplace procedures
	4.5 Faults in attached flexible cord and plug/s are repaired, as required, in accordance with workplace procedures
	4.6 Repairs are inspected and tested for compliance with industry standards
	4.7 Unplanned events are referred to supervisor for direction in accordance with workplace procedures
	4.8 Status report/s is completed and supervisor notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Attaching cords and plugs to electrical equipment must include:

- any cord, cable and plug connected to equipment and cord extension leads intended for single phase supplies up to 230 V

Safe working procedures within in the scope of this unit must:

- be in accordance with AS/NZS 4836 Safe working on low-voltage electrical installations

Unit Mapping Information

This unit replaces and is equivalent to UEENEEP024A Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant industry standards
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- applying quality to workplace procedures and instructions
- attaching flexible cord/s and plug/s and without damage
- inspecting flexible cords and plugs for damage, faults or abnormalities
- dealing with unplanned events in accordance with problem-solving techniques and workplace procedures
- determining the current rating of a range of commonly used flexible cords
- drawing of a basic electrical circuit using correct symbols
- testing flexible cords, plugs and connected equipment for operation and safety up to 230 volts (V) alternating current (a.c.), including polarity and continuity testing
- finding and repairing faults in attached flexible cords and plugs in accordance with established procedures
- preparing to attach flexible cord and plug supplies up to 230 V a.c. supply
- providing status report/s
- using testing equipment
- selecting appropriate flexible cords for a range of single phase appliances relating to application, load and service duty
- identifying correct plug and socket polarities for the range of commonly used 230 V plug socket combinations
- selecting the correct plug and socket combinations for a range of applications, including use in damp areas
- fitting a range of various plugs and sockets with attention to requirements, colour code, polarity and correct termination of conductors with the sheath well into the body, and the cord grip anchored
- terminating cords to several appliances utilising the appropriate cord type and rating.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- electrical safety requirements, including the requirements of AS/NZS 4836 Safe working on low-voltage electrical installations
- basic electrical circuits, including:
 - simple electric circuit (supply, control device and load)
 - industry standard symbols, units of measurement and the abbreviation for electromotive force, potential difference, current and resistance
 - using multiples and sub-multiples for voltage, current and resistance values
 - a.c and direct current (d.c.) supplies
 - single phase electrical loads
 - electrical circuit protection devices
- relationships in an electrical circuit, including:
 - relationship between voltage, current and resistance (Ohm's Law)
 - changes in circuit parameters for altered values of voltage, current and resistance
 - electrical power in relationship to d.c. or resistive a.c. circuits
- test equipment - resistance measurement, including:
 - types of electrical test equipment used for resistance measurement (analogue and digital multimeters, insulation resistance testers and continuity testers)
 - selection of appropriate electrical test instrument for continuity and insulation resistance measurement
 - using analogue and digital multimeters for resistance measurement (ensuring zero setting, correct scale selection, avoidance of parallax error and estimation of between division readings for analogue multimeters)
 - continuity tests and using a continuity tester to check the polarity of a three-core extension cord
 - insulation resistance tests and minimum values for insulation resistance for low voltage (LV) equipment
 - reasons for insulation resistance testing is conducted at higher than supply voltage to relevant industry standards
 - using insulation resistance handheld tester
 - care and storage of electrical instruments
 - regulatory requirements relating to the maintenance and testing of test instrumentation for resistance measurement
- selection of flexible cords and plugs to suit given applications, including:
 - types, structures and applications of common cores, including:
 - parallel two core unsheathed ('figure 8')
 - cords, light duty sheathed
 - ordinary duty sheathed

- heavy duty sheathed
 - textile braided
- service duty
- purpose of colour coding and the recommended single phase colour code
- conventional code used in the most common alternative colours
- factors affecting the choice of plugs and sockets, including ingress protection (IP) rating
- connecting flexible cords and plugs to appliances, including:
 - design features of plugs and sockets which protect the conductor terminations from undue force when disconnecting a cord - tortuous path
 - cord preparation - not to mark/damage the inner core when stripping the sheath for termination, double the end of the conductor to be terminated
 - purpose of earthing
 - structure of double insulated appliances, symbol, reasons they should not be earthed, and maintenance of the integrity of the double insulation
 - preparation of the surfaces at an earthing connection before and after completion of the termination, including terminations exposed to corrosion, and those for which no specific earthing terminal is provided
 - techniques for fitting plugs and sockets
 - techniques for terminating cords and conductors including consequences of poor electrical terminations
- testing, including:
 - importance of conducting both visual and electrical tests to ensure leads are safe and appropriate for connection to supply in regard to physical condition
 - checking the polarity of plug, and for any abnormal or obvious damage or fault
 - minimum acceptable value of insulation resistance between active neutral and earth
 - conducting insulation resistance and continuity tests prior to, and after, connecting cords and plugs to appliances
 - visually checking that the cord/plug assembly has a suitable IP rating for the operating environment
 - visual checks to ensure that arrangements for protection against dangers of mechanical movement as relevant are undamaged and in place
 - techniques for fault finding attached cords and plugs, and cord extension leads
- producing documentation and reports, including:
 - nature and content of, and the need to produce, status reports and documents
- relevant WHS/OHS legislated requirements including inspection and testing of electrical equipment
- relevant industry standards
- relevant manufacturer specifications and operating instruction for tools, equipment and testing devices
- relevant safe job safety assessments or risk mitigation processes
- relevant workplace policies, procedures and instructions, including relevant workplace quality procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEERL0003 Conduct in-service safety testing of electrical cord connected equipment and cord assemblies

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct in-service safety testing of electrical cord connected equipment and cord assemblies.

It includes working safely, using portable appliance tester (PAT), identifying faults, applying tagging, arranging for repair of faulty equipment and complete testing documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Restricted Licensing

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to test cord connected apparatus and cord assemblies

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a given work area are identified, obtained and applied
- 1.2** WHS/OHS risk control work preparation measures and procedures are followed

	1.3	Advice is sought from relevant person/s to ensure work is effectively coordinated with others
	1.4	Cord connected apparatus and cord assemblies to be tested are obtained in accordance with workplace procedures
	1.5	PAT device is checked for correct operation and safety in accordance with relevant industry standards and workplace procedures
2	Test cord connected apparatus and cord assemblies	
	2.1	WHS/OHS risk control work measures and procedures are followed
	2.2	Measures are followed to ensure that cord connected apparatus and cord assemblies to be tested are not connected to the electrical supply in accordance with relevant industry standards
	2.3	Electrical safety requirements and parameters are applied to ensure correct test results are in accordance with relevant industry standards
	2.4	Visual inspection and checks of the cord connected apparatus and cord assemblies are carried out in accordance with workplace procedures to detect any abnormal damage or fault
	2.5	Approval is obtained in accordance with workplace procedures from relevant person/s before any contingencies are implemented
	2.6	PAT routines are followed to test cord connected apparatus and cord assemblies in accordance with workplace procedures
	2.7	Unsafe cord connected apparatus and cord assemblies are identified from test results in accordance with workplace procedures
	2.8	Testing is undertaken effectively to minimise waste of energy and damage to apparatus
3	Tag cord connected apparatus and cord assemblies and document testing activities	
	3.1	WHS/OHS work completion risk control measures and procedures are followed

- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Cord connected apparatus and cord assemblies are tagged in accordance with workplace procedures for their safety status
- 3.4 Arrangements are made for unsafe cord connected apparatus and cord assemblies to be repaired by relevant person/s
- 3.5 Safety testing activities are documented in accordance with relevant industry standards and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

In-service safety testing must include the following:

- at least two different electrical cords and three different items of cord connected equipment with safety faults, including:
 - a device containing an element
 - a device containing a motor
 - a device containing metal oxide varistors (MOV)

Unit Mapping Information

This unit replaces and is equivalent to UEENEEP026A Conduct in-service safety testing of electrical cord connected equipment and cord assemblies.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERL0003 Conduct in-service safety testing of electrical cord connected equipment and cord assemblies

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying appropriate tagging
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- connecting cords and apparatus to the testing device
- dealing with unplanned events in accordance with problem-solving techniques and workplace procedures
- documenting testing activities, including workplace register
- identifying safe and unsafe cords and apparatus
- preparing to test cord connected apparatus and cord assemblies
- preparing and using the portable appliance tester (PAT)
- safety testing of electrical cord connected equipment and cord assemblies
- tagging tested cord connected apparatus and cord assemblies and document testing activities
- using test results to determine the safety status.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- Australian Standards and Commonwealth/state/territory legislation and regulations including:
 - Australian Standard AS/NZS 3760 In-service safety inspection and testing of electrical equipment
 - Commonwealth/state/territory WHS/OHS Acts and regulations
 - limitations of work that can be undertaken
 - codes of practice and associated guidance material
 - risk management principles

- basic electrical testing concepts, including:
 - basic electrical circuits
 - functions of electrical circuit
 - conductors and insulators
 - basic electrical supply system
 - relationship of electrical quantities
 - effects of electrical currents
 - methods/devices used to negate or minimise electrical shock
 - PAT
 - PAT maintenance and calibration
- electrical equipment and cord assemblies testing, including:
 - classification of electrical equipment
 - inspection of electrical equipment (visual inspections)
 - using PAT:
 - earth continuity testing
 - insulation resistance testing
 - polarity testing (extension cords and IEC cords)
- testing and tagging documentation requirements, including:
 - risk assessment documentation
 - frequency of inspection and testing
 - tagging of equipment
 - records maintenance
- electrical cord testing and tagging documentation requirements
- electrical equipment and cord assemblies testing
- electrical testing concepts
- problem-solving techniques
- relevant job safety assessments or risk mitigation processes
- relevant legislation and regulations
- relevant manufacturer specifications
- relevant testing and tagging of portable and cord connected electrical apparatus
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to conducting in-service safety testing of electrical cord connected equipment and cord assemblies
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

UEGNSG709 Process meter reading information using appropriate technology

Modification History

Release 1: This is the first release of this unit of competency in the UEG Gas Industry Training Package.

Application

This unit involves the skills and knowledge required to select and use appropriate technology to process meter reading information and maintain equipment.

It includes the use of relevant tools and equipment, including hand held or wireless/remote recording equipment, computers, computer software and relevant applications and discs, drives and back-up systems.

The application of the skills and knowledge described in this unit may require a licence/registration to practise in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Support Services

Unit Sector

Gas Industry

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Select and use technology

1.1 Work instructions are obtained and confirmed with

to record information	relevant person/s
1.2	Job requirements and workplace procedures are obtained and discussed with relevant person/s to confirm the work schedule
1.3	Work health and safety (WHS)/occupational health and safety (OHS), environmental and sustainable energy policies and procedures are obtained applied in accordance with workplace procedures
1.4	Recommendations to assist others with processing meter reading work are made in accordance with workplace procedures
1.5	Hazards are identified, risks are assessed and control measures prioritised, implemented and monitored in accordance with workplace procedures
1.6	Scope of responsibility under the relevant work permits/authorisations are obtained and confirmed with relevant person/s in accordance with job requirements and workplace procedures
1.7	Technical equipment and tools required for the work are obtained and checked for correct operation and safety in accordance with workplace procedures and manufacturer instructions
1.8	Issues are referred to relevant person/s in accordance with industry standards and workplace procedures
1.9	Work site preparation and work schedule are confirmed with relevant person/s in accordance with workplace procedures
2 Process meter reading information	
2.1	WHS/OHS risk control measures, schedule of work and workplace procedures are followed
2.2	Relevant materials, tools, equipment and devices are selected and used correctly and safely in accordance with manufacturer instructions and workplace procedures
2.3	Information processing is carried out to the required quality standard, without damage to apparatus, equipment, and the surrounding environment or services
2.4	Data is stored, updated and retrieved using relevant technology in accordance with job instructions and

workplace procedures

2.5 Hazard warnings and safety signs are recognised and newly identified hazards and WHS/OHS risks are assessed and reported to relevant person/s for directions in accordance with workplace procedures

2.6 Unplanned events or conditions are referred to relevant person/s for directions in accordance with workplace procedures

2.7 Relevant manuals, manufacturer instructions and websites are consulted to assist with solving problems encountered when processing meter readings in accordance workplace procedures

2.8 Quality and accuracy checks of the work are undertaken in accordance with job instructions and workplace procedures

3 Maintain equipment

3.1 WHS/OHS risk control measures for work completion are followed

3.2 Accidents and incidents are actioned and reported to relevant person/s in accordance with workplace procedures

3.3 Work area is tidied and made safe in accordance with job instructions and workplace procedures

3.4 Minor maintenance of meter reading technology/equipment is undertaken, as required, in accordance with workplace procedures and manufacturer specifications

3.5 Technology consumables are identified and any surplus resources and materials are checked, cleaned and securely stored in accordance with workplace procedures

3.6 Relevant person/s are notified of work completion in accordance with workplace procedures

3.7 Work completion records and equipment faults are reported in accordance with job instructions and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEG Gas Industry Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEGNSG711 Process meter reading information using appropriate technology.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

Assessment Requirements for UEGNSG709 Process meter reading information using appropriate technology

Modification History

Release 1: This is the first release of this unit of competency in the UEG Gas Industry Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying environmental and sustainable energy principles and practices
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - actioning and reporting accidents and incidents
 - hazard identification and reporting
 - implementing risk control measures
- applying relevant industry standards, guidelines, codes of practice and regulations
- communicating effectively in the workplace
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- maintaining a safe and clean workplace
- maintaining equipment
- obtaining and interpreting job requirements, work instructions and work schedule
- performing minor maintenance on meter reading equipment/technology
- performing quality and accuracy checks
- processing meter reading information
- referring issues
- selecting and operating appropriate tools/equipment/technology/devices
- selecting and using technology to record information
- sourcing information from relevant resources to assist with problem solving
- storing, updating and retrieving data.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- environmental and sustainable energy principles and practices

- equipment faults
- expected outcomes of a work activity
- hazards, risk assessments and control measures
- meter reading information processing requirements and procedures
- minor maintenance requirements
- problem-solving techniques
- quality and accuracy checks
- relevant legislation, standards, codes of practice, regulations and guidelines
- relevant manufacturer specifications
- relevant permits and authorisations required
- relevant tools/equipment/technology/devices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- site and data issues
- site preparation, work schedules, and job requirements
- technology consumables
- work instructions
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

UEGNSG710 Read and record meter readings

Modification History

Release 1: This is the first release of this unit of competency in the UEG Gas Industry Training Package.

Application

This unit involves the skills and knowledge required to plan meter reading routines/sequences, carry out meter readings, complete the reading and record utilities industries meter reading data.

It includes efficient planning and scheduling of routes that include availability of competent meter readers, vehicles and relevant meter reading equipment. It also includes scheduling, sequencing a route for others, accessing account information and records relating to previous readings, recording meter readings, determining damage or faults to meters and updating records to show new and changed information.

The application of the skills and knowledge described in this unit may require a licence/registration to practise in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Support Services

Unit Sector

Gas Industry

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and record meter

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work instructions are obtained and confirmed with

reading routine/sequence	relevant person/s and routes planned and mapped to correspond with schedule requirements in accordance with workplace procedures
1.2	Relevant previous records, if applicable, are reviewed
1.3	Work health and safety (WHS)/occupational health and safety (OHS) procedures, environmental and sustainable energy measures and workplace policies and procedures for the work are obtained and applied
1.4	Suggestions to assist with the route planning, reading and recording of meters are made to others involved in the work as required
1.5	Hazards are identified, WHS/OHS risks are assessed and control measures prioritised, implemented and monitored in accordance with workplace procedures
1.6	Resources, including equipment, tools, personal protective equipment (PPE) and route sequences, are obtained and checked for correct working operation and safety in accordance with manufacturer instructions and workplace procedures
1.7	Issues are referred to relevant person/s in accordance with industry and community standards and workplace procedures
1.8	Records are maintained in accordance with job instructions and work schedule for a quality outcome and to minimise risk and damage to property, commerce and individuals in accordance with workplace procedures
2 Carry out meter reading	2.1 WHS/OHS and risk control measures, schedule of work and workplace procedures are followed
	2.2 Relevant materials, tools, equipment and devices are selected and used correctly and safely in accordance with manufacturer instructions and workplace procedures
	2.3 Meter reading is carried out to the required quality standard, without damage to apparatus, equipment, and the surrounding environment or services using sustainable energy principles
	2.4 Meter reading and data recording is carried out in accordance with job instructions and workplace

- procedures
- 2.5 Hazard warnings and safety signs are recognised, and newly identified hazards WHS/OHS risks assessed and reported to authorised person/s for directions in accordance with workplace procedures
 - 2.6 Unplanned events or conditions are dealt with in accordance with workplace procedures
- 3 Complete meter reading and record meter readings**
- 3.1 WHS/OHS risk control measures for work completion are followed
 - 3.2 Accidents and incidents are actioned and reported to relevant person/s in accordance with workplace procedures
 - 3.3 Tools, equipment and any surplus resources/materials are cleaned, checked and stored securely in accordance with workplace procedures
 - 3.4 Relevant person/s are notified of work completion in accordance with workplace procedures
 - 3.5 Work completion records, report forms and data sheets are completed accurately, with unusually high or low meter readings noted and new or changed information updated in accordance with job instructions and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEG Gas Industry Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEGNSG712 Read and record meter readings.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

Assessment Requirements for UEGNSG710 Read and record meter readings

Modification History

Release 1: This is the first release of this unit of competency in the UEG Gas Industry Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying planning skills
- applying relevant legislation, regulations, industry and community standards and codes of practice
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- checking tools, equipment, testing devices and personal protective equipment (PPE) for correct operation and safety
- cleaning, checking and storing tools, equipment and surplus resources/materials
- communicating orally and electronically
- undertaking meter reading process and recording data
- coordinating work with others involved
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- following manufacturer instructions
- maintaining a safe and clean workplace
- obtaining and interpreting job requirements and work schedule
- obtaining records on previous routes and meter readings
- performing quality, final and safety checks
- planning and recording meter reading routine/sequence
- recording and updating new or changed information
- recording damage or faults to meters
- recording meter readings.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- environmental and sustainable energy principles and practices

- hazards, risk assessments and control measures
- oral and electronic format for reporting meter reading
- plan and determine routes
- problem-solving techniques
- quality checks
- relevant authorities
- relevant legislation, industry and community standards, codes and regulations
- relevant manufacturer instructions
- relevant materials, tools, equipment, devices and PPE
- relevant permits and authorisations required
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace policies and procedures
- relevant workplace records and documentation
- route sequences
- site and data issues
- techniques to communicate both electronically and verbally
- types of meters used for utilities industries
- work safety and emergency procedures
- work schedules and job requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to inspect overhead poles, structures and electrical apparatus in the electricity supply industry (ESI).

It includes visual inspection of poles and structures above ground, overhead conductors and cables, underground to overhead transition points, electrical apparatus, hardware and earthing systems.

It also includes identifying and reporting defects.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to inspect overhead poles, structures, and electrical apparatus

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3** Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.4** Hazards are identified, risks assessed and control measures identified and applied
- 1.5** Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
- 1.6** Liaison and communication with stakeholders is carried out in accordance with workplace requirements
- 1.7** Worksite is prepared in accordance with the work plan and workplace requirements
- 1.8** Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Inspect overhead poles, structures and electrical apparatus

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
- 2.3** Hazard control measures are monitored in accordance with workplace requirements
- 2.4** Poles, structures and electrical apparatus are visually inspected in accordance with the work plan and workplace requirements
- 2.5** Inspection results are recorded in accordance with

workplace requirements

2.6 Incidents or unplanned events are responded to in accordance with workplace requirements

3 Complete work and documentation

3.1 Completed work is checked for compliance against the work plan and workplace requirements

3.2 Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Plant and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP11 Inspect overhead poles-structures and electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRDO001 Inspect overhead poles, structures and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- visually inspecting poles, structures and electrical apparatus
- identifying, categorising and recording defects
- undertaking inspections using at least one (1) of the following:
 - ground
 - vehicle
 - helicopter
 - fixed wing
 - remotely piloted aircraft (RPA)
 - elevated work platform (EWP)
 - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
 - safe approach distances
 - visual inspection requirements

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- poles, including:
 - types
 - characteristics
 - defects
- hardware, including:
 - types
 - characteristics
 - defects
- electrical apparatus, including:
 - types
 - characteristics
 - defects
- electricity networks, including:
 - construction types
 - identification of low voltage (LV)
 - identification of high voltage (HV)
 - clearances for overhead conductors, cables and structures
- identification and categorisation of defects
- procedures for recording inspection results.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for inspecting overhead poles, structures and electrical apparatus

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDREL001 Apply environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to apply environmental requirements in the electricity supply industry (ESI).

It includes participating in and contributing to environmental requirements for specific projects/sites, identifying and controlling possible environmental risks and impacts, and recording and reporting environmental incidents.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to apply environmental

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements

requirements	for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Environmental hazards are identified, risks assessed and control measures identified and applied
	1.4 Work permits/approvals are organised in accordance with workplace requirements
	1.5 Plant, materials, vehicles, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Worksite is prepared in accordance with the work plan and workplace requirements
2 Apply environmental requirements	2.1 Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Environmental hazard control measures are monitored in accordance with workplace requirements
	2.3 Work permits/approvals are applied in accordance with workplace requirements
	2.4 Plant, materials, vehicles, tools, equipment and PPE are used in accordance with workplace requirements
	2.5 Environmental incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	3.1 Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Work permits/approvals are finalised in accordance with workplace requirements
	3.3 Environmental incidents or unplanned events are reported in accordance with workplace requirements
	3.4 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.5 Plant, vehicles, tools, and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

- 3.6 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
- 3.7 Environmental work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL11 Apply sustainable energy and environmental procedures.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDREL001 Apply environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
 - environmental
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- applying and monitoring environmental requirements
- completing environmental risk assessment
- using plant, vehicles, materials, tools and equipment safely
- maintaining a safe and clean workplace environment
- organising and finalising relevant work permits/approvals in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
 - manufacturer and supplier information of hazardous substances/dangerous goods, including safety data sheets (SDS)
- hazards, risk assessment and risk control requirements, including potential hazards
- types and application of PPE

- application, purpose and types of work permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- employer and employee responsibilities
- source information on environmental issues and updates
- environmental impacts from work-related activities
- environmental terminology used in the electricity supply industry (ESI)
- workplace environmental management plan
- methods of cleaning mobile plant, equipment and tools
- safe use of plant, vehicles, materials, tools and equipment
- types and application of PPE used for hazardous substances and dangerous goods/materials
- procedures for handling plant, tools and equipment that contain hazardous substances
- procedures for handling, controlling, storing, recycling and disposing of:
 - hazardous substances
 - waste materials
- emergency procedures for spillages of hazardous substances to reduce risks to the environment, including:
 - methods of cleaning up excessive spillages
 - methods of protection to surrounding environment
 - procedures for notification of relevant personnel and authorities
 - procedures for reporting and recording incidents
- environmentally sensitive areas, including:
 - identification of
 - working in
 - procedures for entering and exiting
- fire precautions for field work.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in

industry for applying environmental requirements

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate plant and equipment in the vicinity of live electrical apparatus in the electricity supply industry (ESI).

It includes operating plant and equipment safely up to the defined safe approach distance.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to operate plant and equipment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

be performed are referred to and confirmed

- 1.2 Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3 Hazards are identified, risks assessed and control measures identified and applied
- 1.4 Work permits are received and signed in accordance with workplace requirements
- 1.5 Plant, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.6 Safe approach distances are determined and confirmed in accordance with workplace requirements
- 1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
- 1.8 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
- 1.9 Worksite is prepared in accordance with the work plan and workplace requirements
- 1.10 Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Operate plant and equipment

- 2.1 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2 Hazard control measures are monitored in accordance with workplace requirements
- 2.3 Safety observer is positioned to observe the plant or equipment in accordance with workplace requirements
- 2.4 Safe approach distances are maintained when operating plant and equipment in the vicinity of live electrical apparatus
- 2.5 Communication methods between workers and safety observer are used in accordance with workplace requirements

	2.6	Plant and equipment are safely operated in the vicinity of live electrical apparatus in accordance with workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	3.1	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- confirming safe approach distances
- operating equipment while maintaining the safe approach distance
- operating plant while maintaining the safe approach distance
- determining electricity network voltages, including:
 - low voltage (LV)
 - high voltages (HV)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
 - safe approach distances

- hazard, risk assessment and risk control requirements, including potential hazards:
 - conductor movements - swing, sag or blow off
- types and application of PPE
- safe use of plant and equipment in the vicinity of live electrical apparatus
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
 - role and responsibilities
 - communication methods
- plant and equipment, including:
 - operating characteristics
 - terminology related to operating in the vicinity of live electrical apparatus
 - hazards and potential hazards
 - communication methods and barriers between plant/equipment operator and safety observer
- characteristics of overhead and underground electricity networks, including:
 - transmission, distribution and rail
 - layout/configuration
 - components
 - voltage levels.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for operating plant and equipment in the vicinity of live electrical apparatus
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDREL005 Work safely in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to work safely in the vicinity of live electrical apparatus in the electricity supply industry (ESI).

It includes working safely up to the defined personal safe approach distance in the vicinity of live electrical apparatus for ESI workers.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to work safely in

1.1 Legislation, regulations, standards, codes of practice and

the vicinity of live electrical apparatus

organisational workplace requirements for the work to be performed are referred to and confirmed

- 1.2** Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.3** Hazards are identified, risks assessed and control measures identified and applied
- 1.4** Work permits are received and signed in accordance with workplace requirements
- 1.5** Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
- 1.6** Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
- 1.7** Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
- 1.8** Worksite is prepared in accordance with the work plan and workplace requirements

2 Work safely in the vicinity of live electrical apparatus

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Lifting, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
- 2.3** Hazard control measures are monitored in accordance with workplace requirements
- 2.4** Safety observer is positioned to observe the work in accordance with workplace requirements
- 2.5** Communication methods between workers and safety observer are used in accordance with workplace requirements
- 2.6** Safe approach distances are maintained when the work is being performed in the vicinity of live electrical apparatus

	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	3.1	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL16 Working safely near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDREL005 Work safely in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- determining electricity network voltages, including:
 - low voltage (LV)
 - high voltages (HV):
 - distribution
 - sub-transmission
 - transmission
- identifying electricity network assets
- determining and confirming safe approach distances
- performing work while maintaining the personal safe approach distance
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace

requirements, including:

- WHS/OHS
- safe approach distances
- emergency procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
 - role and responsibilities
 - communication methods
- basic electrical principles, including:
 - voltage, current and resistance
 - typical effects of current, including physiological effects and induced voltages
 - consequences of short circuits, including arc flash and touch and step potentials
- electricity networks, including:
 - LV
 - HV:
 - distribution
 - sub-transmission
 - transmission
 - earthing systems
 - associated assets
 - layouts and configuration
 - basic protection
 - relationship between an overhead and underground supply system
- terminology related to working safely in the vicinity of live electrical apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for working safely near live electrical apparatus
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to work safely in the vicinity of live electrical apparatus as a non-electrical worker.

It includes compliance with safe approach distances for the worker, plant, tools and equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work safely in the vicinity of live

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

electrical apparatus		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work permits are received and signed in accordance with workplace requirements
	1.7	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9	Worksite is prepared in accordance with the work plan and workplace requirements
	1.10	Electricity infrastructure assets and associated voltages are identified and confirmed
	1.11	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
2 Work safely in the vicinity of live electrical apparatus	2.1	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements

	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	3.1	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance workplace requirements
	3.3	Works records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL14 Working safely near live electrical apparatus as a non-electrical worker.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- confirming and maintaining the safe approach distance, including:
 - mobile plant, tools and equipment
 - personal
- determining electricity network voltages, including:
 - low voltage (LV)
 - high voltages (HV)
- identifying electricity network assets
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS

- safe approach distances
- emergency procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment, including:
 - earthing of mobile plant
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
 - role and responsibilities
 - communication methods
- basic electrical principles, including:
 - voltage, current and resistance
 - typical effects of current, including physiological effects and induced voltages
 - consequences of short circuits, including arc flash and touch and step potentials
- electricity networks, including:
 - LV
 - HV
 - earthing systems
 - associated assets
 - asset identification
 - layouts and configuration
 - basic protection
 - relationship between an overhead and underground supply system
- terminology related to working safely in the vicinity of live electrical apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRMP001 Apply access authority procedures to work on or near electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the knowledge and understanding of electricity supply industry (ESI) access authority procedures for work on or near ESI electrical apparatus.

It includes the relevant state and territory access authority procedures, and organisational workplace requirements and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

No licensing applies to this unit at the time of publication.

Other conditions may also apply under state and territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential Performance criteria describe the performance needed to

outcomes.

demonstrate achievement of the element.

1 Prepare to apply access authority procedures

- 1.1** Organisational workplace requirements for access authority are identified
- 1.2** Access authority permit is obtained in accordance with workplace requirements
- 1.3** Access authority permit document is interpreted and confirmed for the specific work activity in accordance with workplace requirements
- 1.4** Personnel are confirmed as appropriately authorised to apply access authority procedures in accordance with workplace requirements
- 1.5** Hazards are identified, risks assessed, and control measures identified

2 Apply access authority procedures

- 2.1** Hazard control measures are applied and monitored in accordance with workplace requirements
- 2.2** Access authority permit specific roles and responsibilities are explained and acknowledged
- 2.3** Permitted access area/s are confirmed and acknowledged against the access authority requirements
- 2.4** Access authority permit is signed on in accordance with workplace requirements

3 Complete access authority procedures

- 3.1** Access authority permit conditions are confirmed before sign off in accordance with workplace requirements
- 3.2** Access authority permit is signed off in accordance with workplace requirements
- 3.3** Access authority permit documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRRF09 Apply access procedures to work on or near electrical network infrastructure.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRMP001 Apply access authority procedures to work on or near electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational access authority requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- receiving access authority permit in accordance with workplace requirements
- confirming roles and responsibilities of the workers with the access authority permit
- following workplace requirements for signing on and off from an access authority permit.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- access authority codes of practice, guidelines and organisational workplace requirements for work on or near electrical apparatus
- hazard, risk assessment and risk control requirements
- organisational access authority procedures including:
 - roles and responsibilities for access authority permit
 - access authority permit for a specific work activity
 - sign on and sign off procedures for an access authority permit
 - cancelling or suspending an access authority permit
 - communication procedures to confirm work is completed or suspended
 - relevant authorisation requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements used in industry for applying access authority procedures to work on or near electrical apparatus

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the knowledge and understanding of electricity supply industry (ESI) safety rules for work on, near or in the vicinity of ESI electrical apparatus.

It includes the relevant state and territory safety rules, and organisational workplace requirements and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements

No licensing applies to this unit at the time of publication.

Other conditions may also apply under state and territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify ESI safety rules for work on, near or in the vicinity of ESI electrical

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 ESI safety rules, codes of practice and guidelines are identified

apparatus

	1.2	Organisational workplace hazard and risk assessment requirements are identified
	1.3	Organisational workplace access authority requirements are identified
2 Interpret ESI safety rules for work on, near or in the vicinity of ESI electrical apparatus	2.1	ESI safety rules, codes of practice and guidelines application are interpreted
	2.2	Organisational workplace hazard and risk assessment requirements are interpreted
	2.3	Organisational workplace access authority requirements are correctly interpreted

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRRF01 Apply ESI safety rules, codes of practice and procedures for work on or near electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying relevant electricity supply industry (ESI) safety rules, codes of practice and guidelines
- identifying organisational workplace requirements for:
 - electrical hazards
 - assessing risks
 - recording control measures
- identifying organisational safe approach distances (SAD) for:
 - personnel
 - vehicles
 - insulated mobile plant
 - non-insulated mobile plant
- identifying organisational access authority requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- ESI safety rules, codes of practice and guidelines
- organisational requirements for:
 - safe approach distances (SAD)
 - safety observer roles
 - hazard, risk assessment and control measures
 - access authority
 - emergency response procedures
 - types and application of personal protective equipment (PPE).

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRMP009 Perform tower rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform tower rescue in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the inspection and use of tower rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation
and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
or

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to perform tower rescue	1.1	Workplace requirements for the rescue are identified and confirmed
	1.2	Rescue equipment including personal protective equipment (PPE) is obtained, inspected and positioned in accordance with workplace requirements
2 Carry out tower rescue	2.1	Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2	Tower is accessed in accordance with workplace requirements
	2.3	Rescue equipment is attached in accordance with workplace requirements
	2.4	Rescue equipment is used to rescue casualty in accordance with workplace requirements
3 Complete the tower rescue procedure	3.1	Casualty is assessed in accordance with workplace requirements
	3.2	Incident site is secured and entry controlled in accordance with workplace requirements
	3.3	Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF006 Perform tower rescue.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRMP009 Perform tower rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and positioning rescue equipment
- fitting of rescue personal protective equipment (PPE)
- obtaining, inspecting and using PPE
- performing tower rescue in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- types and application of PPE
- organisational procedures for tower rescue including:
 - inspection and placement of rescue equipment
 - assessment and control hazards to rescuer, casualty and others
 - isolation procedures, where appropriate
 - safe approach distances (SAD) appropriate to tower rescue
 - assessment of situation
 - activation of emergency response
 - tower access
 - attachment of rescue equipment
 - lowering casualty safely to ground
 - removal of casualty to safe location
 - assessment of casualty
 - incident site security
 - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment and PPE currently used in industry for performing tower rescue
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRRC004 Install and replace energy meters and associated equipment in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and replace whole current energy meters and associated equipment in a very remote community in the electricity supply industry (ESI).

It includes the testing of whole current energy meters and associated equipment to identify faults and establish normal functions of energy meters and associated equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to install and replace energy meters and associated equipment

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3** Materials required for work are determined and obtained in accordance with work plan and workplace requirements
- 1.4** Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.5** Hazards are identified, risks assessed and control measures identified and applied
- 1.6** Work is prioritised and sequenced for completion in accordance with workplace requirements
- 1.7** Electrical network circuit is confirmed as being isolated and earthed/short circuited in accordance with workplace requirements
- 1.8** Work permits are received and signed in accordance with workplace requirements
- 1.9** Worksite is prepared in accordance with work plan and workplace requirements

2 Carry out the installation or replacement of energy meters and associated equipment

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Lifting, climbing, working at heights, the use of plant, tools, equipment and PPE are carried out in accordance

with workplace requirements

- 2.3 Hazard control measures are monitored in accordance with workplace requirements
- 2.4 Installation or replacement of whole current energy meters is carried out in accordance with workplace requirements
- 2.5 Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements
- 2.6 Whole current energy meters and associated equipment are tested in accordance with workplace requirements
- 2.7 Whole current energy meters and associated equipment are programmed and sealed in accordance with workplace requirements
- 2.8 Incidents or unplanned events are responded to in accordance with workplace requirements
- 2.9 Quality checks of work are undertaken in accordance with work plan and workplace requirements

3 Complete work and documentation

- 3.1 Completed work is checked for compliance against the work plan and workplace requirements
- 3.2 Incidents or unplanned events are reported in accordance with workplace requirements
- 3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
- 3.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
- 3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
- 3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRI34 Install and replace energy meters and associated equipment in remote communities.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRRC004 Install and replace energy meters and associated equipment in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace including the use of work permits, clearances and isolation permissions
- confirming electrical network circuits have been isolated and earthed/short circuited in accordance with work plan and workplace requirements
- installing or replacing at least one (1) of the following whole current energy meters:
 - induction disk energy meter
 - electronic energy meter
 - electronic summator
- installing at least two (2) of the following associated metering equipment:
 - service fuses
 - service links
 - meter panels
 - controlled output meters
- re-energising electrical network circuits in accordance with workplace requirements
- completing at least three (3) of the following tests of whole current energy meters:
 - polarity*
 - continuity
 - insulation resistance
 - meter functionality (load)
 - neutral integrity
 - phase sequence (rotation)

- voltage
- (*must do)
- working from at least one (1) of the following:
 - elevated work platform (EWP)
 - platform
 - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- whole current energy meters, including:
 - construction
 - operation
 - error codes
- associated metering equipment, including:
 - construction
 - operation
- metering arrangements, including:
 - direct
 - distributed master
 - multiple master
 - plug-in
 - multiple earth neutral (MEN) system
- cable types and applications
- installation tools, equipment and testing devices
- installation and removal of energy meters, including:
 - stripping cable
 - cable terminations
 - meter wiring positions
 - service protection device (SPD)

- meter boards
- testing procedures, including:
 - continuity
 - insulation resistance
 - polarity
 - phase sequence
 - neutral integrity
 - meter functionality
- procedures for recording energy meter documentation
- customer education on energy meters
- techniques for the maintenance of energy metering, including:
 - fault finding
 - fault rectification
 - meter reading
 - tariff changes
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and replacing whole current energy meters and associated equipment in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRRC006 Perform low voltage electricity network switching in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform low voltage (LV) electricity network switching in a very remote community in the electricity supply industry (ESI).

It includes preparing a switching schedule, isolating and restoring LV overhead and underground electricity networks to a given switching schedule using LV circuit breaking and isolation devices.

It also includes paralleling LV electrical network circuits, using specialist tools, personal protective equipment (PPE), earthing and testing equipment, and the use of work permits and authorisation protocols.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to perform LV electricity network switching

2 Perform isolation of LV electricity network

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3** Hazards are identified, risks assessed and control measures identified and applied
- 1.4** Plant, tools, equipment and PPE required for work are determined, obtained and confirmed in working order
- 1.5** Switching schedule is developed in accordance with work plan and workplace requirements
- 1.6** LV network switching is prioritised for completion in accordance with workplace requirements
- 1.7** LV network switching schedule is communicated with relevant personnel in accordance with workplace requirements
- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Authorisation is obtained to commence LV electricity network switching in accordance with switching schedule and workplace requirements
- 2.3** Lifting, climbing, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
- 2.4** Hazard control measures are monitored in accordance with workplace requirements
- 2.5** LV electricity network is isolated in accordance with switching schedule
- 2.6** Communications are maintained with authorisation authority in accordance with workplace requirements

- 2.7 LV electricity network is tested to confirm de-energised and earthed/short circuited in accordance with switching schedule and workplace requirements
- 2.8 Incidents or unplanned events are responded to in accordance with workplace requirements
- 2.9 Work permits are received and signed in accordance with workplace requirements
- 2.10 Authorisation authority is notified isolation is completed in accordance with switching schedule and workplace requirements
- 3 Perform restoration of LV electricity network**
 - 3.1 Work permits are signed off in accordance with switching schedule and workplace requirements
 - 3.2 Authorisation is obtained to commence restoration of LV electricity network in accordance with workplace requirements
 - 3.3 Lifting, climbing, working at heights and the use of plant, tools and equipment, are carried out in accordance with workplace requirements
 - 3.4 Restore LV electricity network in accordance with switching schedule
 - 3.5 Authorisation authority is notified restoration is completed in accordance with switching schedule and workplace requirements
- 4 Complete work and documentation**
 - 4.1 Completed work is checked for compliance against the work plan and workplace requirements
 - 4.2 Incidents or unplanned events are reported in accordance with workplace requirements
 - 4.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
 - 4.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
 - 4.5 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS35 Perform remote community network field switching to a given schedule.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRRC006 Perform low voltage electricity network switching in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - relevant work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- preparing a low voltage (LV) electricity network switching schedule in accordance with workplace requirements
- obtaining authorisation to perform LV electricity network switching
- isolating and restoring LV electricity networks in accordance with switching schedule requirements
- undertaking tests of LV electricity network, including:
 - voltage
 - phase sequence (rotation)
 - polarity
- operating LV switchgear, including at least one (1) of the following:
 - LV circuit breaker
 - LV links
 - LV fuses
- working from at least one (1) of the following:
 - elevated work platform (EWP)
 - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- requirements for the use of manuals, system diagrams/plans and drawings, including:
 - types, characteristics and capabilities of electrical apparatus
 - use, characteristics and capabilities of specialised tools and testing equipment
 - restrictions pertaining to LV switching equipment
 - high voltage (HV) network interconnectors source of possible back-feed
- LV switchgear, including:
 - types
 - categories
 - application
 - function
 - operating capabilities
- types, characteristics and capabilities of LV specialised switching and testing equipment
- procedures for obtaining correct LV switching authorisation, including:
 - identification of hazards, assessing and controlling risks
 - safety procedures and precautions
 - safe approach distances
 - responsibilities and protocols
 - identifying switching resources
 - procedures for obtaining electrical access permits/authorities
 - requirements for team switching
 - procedures for coordination of operations
- techniques for overhead and underground LV electricity network switching, including:
 - isolation procedures
 - testing and earthing/short circuiting LV electrical apparatus
 - pre-switching checks
 - switching operational procedures
 - emergency fault procedures
 - restoration procedures
- role and responsibilities of the LV switching operator

- application, function and operating capabilities of switchgear
- preparation of a LV switching schedule, including:
 - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to switching sheet schedules
 - requirements for the use of manuals, system diagrams/plans and drawings - types, characteristics and capabilities of LV electrical equipment to be switched; isolation points and earthing; and responsibilities of the switching operator
 - techniques in writing switching schedules - sequence of switching operations, isolation procedures, earthing procedures and switching completion notification procedures
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for performing LV electricity network switching in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to solve electrical network apparatus problems in a very remote community in the electricity supply industry (ESI).

It includes determining correct operation of network apparatus and related circuits, providing solutions as they apply to the electrical network and documenting problem-solving activities.

It also includes safe working practices, network apparatus problem-solving processes, including the use of voltage, current and resistance measuring devices, diagnosing and providing solutions derived from test analysis to solve problems in network apparatus and related circuits.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to solve electrical network apparatus problems

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3** Materials required for work are determined and obtained in accordance with work plan and workplace requirements
- 1.4** Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.5** Hazards are identified, risks assessed, and control measures identified and applied
- 1.6** Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
- 1.7** Work permits are received and signed in accordance with workplace requirements
- 1.8** Worksite is prepared in accordance with the work plan and workplace requirements
- 1.9** Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Solve electrical network apparatus problems

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

- 2.3 Hazard control measures are monitored in accordance with workplace requirements
- 2.4 Live testing or measuring requirements are determined in accordance with workplace requirements
- 2.5 Electrical network circuits are confirmed as isolated and earthed/short circuited in accordance with workplace requirements
- 2.6 Operating parameters of the circuit within the electrical network apparatus are verified in accordance with workplace requirements
- 2.7 Established methodical processes are used to identify electrical problems from measured and calculated values in accordance with workplace requirements
- 2.8 Electrical network apparatus circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements
- 2.9 Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements
- 2.10 Electrical network apparatus is tested to determine correct operation in accordance with workplace requirements
- 2.11 Incidents or unplanned events are responded to in accordance with workplace requirements
- 2.12 Quality checks of work are undertaken in accordance with work plan and workplace requirements

3 Complete work and documentation

- 3.1 Completed work is checked for compliance against the work plan and workplace requirements
- 3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
- 3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
- 3.4 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

- 3.5 Incidents or unplanned events are reported in accordance with workplace requirements
- 3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRI32 Solve electrical problems in remote community network apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace, including the use of work permits, clearances and isolation permissions
- confirming network electrical apparatus circuit is isolated
- determining the operating parameters of a circuit within the electrical network apparatus
- using established methodical processes to solve electrical problems in accordance with workplace requirements, including:
 - choosing correct instruments and ranges for testing and measuring values
 - connecting instruments to measure and calculate values in circuits within the electrical network apparatus
- identifying at least three (3) of the following problems:
 - high voltage (HV)/low voltage (LV)
 - high resistance
 - low resistance
 - fault current (fuses)
 - kilowatt hour meter faults (no supply, reverse polarity etc)
 - public lighting faults
- working from at least one (1) of the following:
 - elevated work platform (EWP)
 - platform
 - ladder
- connecting and testing electrical network apparatus to determine correct operation
- dealing with an unplanned event on at least one (1) occasion

- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
 - wiring rules requirements – continuity test and insulation resistance test
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- safe use, care and storage of electrical instruments
- parallel circuits, including:
 - schematic diagram of a single-source direct current (d.c.) parallel circuit
 - major components of a parallel circuit (power supply, loads, connecting leads and switch)
 - applications where parallel circuits are used in the remote community electricity supply industry (ESI)
 - characteristics of a parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a parallel circuit)
 - relationship between currents entering a junction and currents leaving a junction
 - calculation of the total resistance of a parallel circuit
 - calculation of the total current of a parallel circuit
 - calculation of the total voltage of a parallel circuit
 - single-source d.c. parallel circuit set-up and connection
 - resistance, voltage and current measurements in a single-source parallel circuit
 - voltage, current, resistance or power dissipated from measured values of any of these quantities
- series/parallel circuits, including:
 - schematic diagram of a single-source d.c. series/parallel circuit
 - major components of a series/parallel circuit (power supply, loads, connecting leads and switch)
 - applications where series/parallel circuits are used in the remote community ESI
 - characteristics of a series/parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a series/parallel circuit)
 - calculation of the total resistance of a series/parallel circuit
 - calculation of the total current of a series/parallel circuit
 - calculation of the total voltage and the individual voltage drops of a series/parallel circuit
 - setting up and connecting a single-source d.c. series/parallel circuit

- resistance, voltage and current measurements in a single-source d.c. series/parallel circuit
- voltage, current, resistances or power dissipated from measured values of any two of these quantities
- factors affecting resistance, including:
 - four factors that affect the resistance of a conductor (type of material, length, cross-sectional area and temperature)
 - affect the change in the type of material (resistivity) has on the resistance of a conductor
 - effect the change in length has on the resistance of a conductor
 - effect the change in cross-sectional area has on the resistance of a conductor
 - effects of temperature change on the resistance of various conducting materials
 - effects of resistance on the current-carrying capacity and voltage drop in cables
- effects of meters in a circuit, including:
 - meters in terms of units to be measured, range, loading effect, accuracy and safety category of meters for a given application
 - instruments used in the field to measure voltage and current, and the typical circumstances in which they are used
 - hazards involved in using electrical instruments and the safety control measures that should be taken
 - operating characteristics of analogue and digital meters
 - correct techniques to read the scale of an analogue meters and how to reduce the ‘parallax’ error
 - types of voltmeters used in the ESI – bench type, clamp meter and multimeter
 - purpose and characteristics (internal resistance, range, loading effect and accuracy) of a voltmeter
 - types of voltage indicator testers (e.g., light-emitting diode (LED), neon, solenoid, volt-stick and series tester) and the purpose of each voltage indicator tester
 - various types of ammeters used in the ESI (bench, clamp meter and multimeter)
 - purpose and characteristics of an ammeter and the correct connection (series) of an ammeter into a circuit
 - loading effect of various voltmeters when measuring voltage across various loads
- resistance measurement, including:
 - identification of instruments used in the field to measure resistance (including insulation resistance (IR)) and the typical circumstances in which they are used
 - purpose of an IR tester
 - parts and functions of various analogue and digital IR tester (selector range switch, zero ohms adjustment, battery check function, scale and connecting leads)
 - reasons why the supply must be isolated prior to using the IR tester
 - where and why the continuity test would be used in an ESI systems
 - where and why the insulation resistance test would be used in an ESI system
 - voltage ranges of an IR tester and where each range may be used. e.g. 250 V d.c, 500 V d.c & 1000 V d.c
 - IR tester calibration requirements

- measurement of low values of resistance using an IR tester continuity functions
- measurement of high values of resistance using an IR tester insulation resistance function
- volt-ammeter (short shunt and long shunt) methods of measuring resistance
- calculation of resistance values using voltmeter and ammeter reading (long and short shunt connections)
- capacitors and capacitance, including:
 - basic construction of standard capacitor, highlighting the plates, dielectric and connecting leads
 - types of dielectric material and each dielectric's relative permittivity
 - identification of various types of capacitors commonly used in the ESI
 - circuit symbol of various types of capacitors - standard; variable, trimmer and polarised
 - terms: capacitance (C), electric charge (Q) and energy (W)
 - unit of capacitance (Farad), electric charge (Coulomb) and energy (Joule)
 - factors affecting capacitance and how factors are present in all circuits to some extent
 - how a capacitor is charged in a d.c. circuit
 - behaviour of a series d.c. circuit containing resistance and capacitance components - charge and discharge curves
 - term: time constant and its relationship to the charging and discharging of a capacitor
 - calculation of quantities from given information - capacitance ($Q = VC$); energy ($W = \frac{1}{2}CV^2$); voltage ($V = Q/C$)
 - connection of a series d.c. circuit containing capacitance and resistor to determine the time constant of the circuit
- capacitors, including:
 - hazards involved in working with capacitance effects and the safety control measures that should be taken
 - safe handling and the correct methods of discharging various size capacitors
 - dangers of a charged capacitor and the consequences of discharging a capacitor through a person
 - effects of capacitors connected in parallel
 - effects on the total capacitance of capacitors connected in series
 - common faults in capacitors
 - testing of capacitors to determine serviceability
 - application of capacitors in the ESI
- magnetism, including:
 - magnetic field pattern of bar and horse-shoe magnets
 - magnets attraction and repulsion when brought in contact with each other
 - common magnetic and non-magnetic materials and groupings (diamagnetic, paramagnetic and ferromagnetic materials)
 - principle of magnetic screening (shielding) and its applications
 - practical applications of magnets
- electromagnetism, including:

- conventions representing direction of current flow in a conductor
- magnetic field pattern around a single conductor and two adjacent conductors carrying current
- right hand rule to determine the direction of magnetic field around a current-carrying conductor
- direction of force between adjacent current-carrying conductors
- effect of current, length and distance apart on the force between conductors (including forces on bus bars during fault conditions)
- magnetic field around an electromagnet
- right hand rule to determine the direction of magnetic field around a current-carrying coil
- magnetomotive force (m.m.f.) and its relationship to the number of turns in a coil and the current flowing in the coil
- practical applications of electromagnets
- electromagnetic induction, including:
 - principle of electromagnetic induction (Faraday's law of electromagnetic induction)
 - Fleming's right hand rule to a current-carrying conductor under the influence of a magnetic field
 - calculation of induced electromagnetic force (e.m.f.) in a conductor given the conductor length, flux density and velocity of the conductor
 - calculation of induced e.m.f. in a coil given the number of turns in a coil and the rate of change of flux
 - calculation of force on a conductor given the flux density of the magnetic field, length of the conductor and the current being carried by the conductor
 - Lenz's law
 - applications of electromagnetic induction
- inductance, including:
 - construction of an inductor, including a bifilar winding inductor
 - Australian Standard circuit diagram symbol for the four types of inductor
 - effect of physical parameters on the inductance of an inductor
 - common types of inductor cores
 - applications of the different types of inductors
 - definition of terms self-induction, inductance and mutual inductance
 - calculation of value of self-induced e.m.f. in a coil
 - mutual induction occurs between two coils
 - practical applications for the effects of self and mutual induction
 - undesirable effects of self and mutual induction
- magnetic devices, including:
 - construction, operation and applications of relays
 - construction, operation and applications of contactors
 - magnetic methods used to extinguish the arc between opening contacts
 - construction, operation and applications of Hall effect devices

- construction, operation and application of magnetic sensing devices
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for solving problems in electrical network apparatus in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to solve problems in low voltage (LV) electrical network circuits in a very remote community in the electricity supply industry (ESI).

It includes establishing correct operation of single and multi-phase LV electrical network circuits and solving circuit problems as they apply to servicing, fault-finding and installation work function.

It also includes safe working practices, issues related to fault protection, power factor and multiple earthed neutral (MEN) systems and the use of voltage, current and resistance measuring devices to provide solutions to LV electrical network circuit problems derived from calculated and measured parameters.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to solve problems in LV electrical network circuits

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Work plan is obtained and confirmed in accordance with workplace requirements
- 1.3** Materials required for work are determined and obtained in accordance with work plan and workplace requirements
- 1.4** Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.5** Hazards are identified, risks assessed and control measures identified and applied
- 1.6** Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
- 1.7** Work permits are received and signed in accordance with workplace requirements
- 1.8** Worksite is prepared in accordance with the work plan and workplace requirements
- 1.9** Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Solve problems in LV electrical network circuits

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

- 2.3 Hazard control measures are monitored in accordance with workplace requirements
- 2.4 Live testing or measuring requirements are determined in accordance with workplace requirements
- 2.5 Electrical network circuits are confirmed as isolated and proved earthed/short circuited in accordance with workplace requirements
- 2.6 Operating parameters of the network electrical circuits are verified in accordance with workplace requirements
- 2.7 Established methodical processes are used to identify electrical network circuit problems from measured and calculated values in accordance with workplace requirements
- 2.8 Electrical network circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements
- 2.9 Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements
- 2.10 Electrical network circuits are tested to determine correct operation in accordance with workplace requirements
- 2.11 Incidents or unplanned events are responded to in accordance with workplace requirements
- 3 **Complete work and documentation**
 - 3.1 Completed work is checked for compliance against the work plan and workplace requirements
 - 3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace procedures
 - 3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
 - 3.4 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
 - 3.5 Incidents or unplanned events are reported in accordance with workplace requirements
 - 3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with

workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRI33 Solve electrical problems in remote community network systems.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace, including the use of work permits, clearances and isolation permissions
- confirming network electrical circuits are isolated
- determining the correct operation of the network electrical circuits
- using established methodical processes to solve electrical problems in accordance with workplace requirements, including:
 - choosing correct instruments and ranges for testing and measuring values
 - connecting instruments to measure and calculate values in circuits within the electrical network
- identifying circuit problems, including at least three (3) of the following:
 - high voltage (HV)/low voltage (LV)
 - high resistance
 - low resistance
 - fault current (fuses)
 - kilowatt hour meter faults (no supply, reverse polarity, etc)
 - streetlight faults
- connecting and testing network electrical circuits to determine correct operation
- working from at least one (1) of the following:
 - elevated work platform (EWP)
 - platform
 - ladder

- dealing with an unplanned event on at least (1) one occasion
- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
 - WHS/OHS
 - wiring rules requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- alternating current (a.c.) quantities, including:
 - sine, cosine and tangent ratios of a right-angle triangle
 - Pythagoras theorem to a right-angle triangle
 - use of the cathode ray oscilloscope (CRO) to measure direct current (d.c.) and a.c. voltage levels
 - sinusoidal voltage generated by a single turn coil rotated in uniform magnetic fields
 - terms 'period', 'maximum value', 'peak-to-peak value', 'instantaneous value', 'average value', and 'root-mean-square (r.m.s.) value', in relation to a sinusoidal waveform
 - calculation of the instantaneous value of induced voltage of a generated sinusoidal waveform
 - measurement of instantaneous, peak and peak-to-peak values and the period of a sinusoidal waveform
 - calculation of r.m.s. value and frequency of a sinusoidal waveform from values of peak voltage and period
- phasor diagrams, including:
 - purpose of phasor diagrams
 - 'in-phase', 'out-of-phase', 'phase angle' 'lead' and 'lag'
 - phase angle between two or more alternating quantities from a given sinusoidal waveform diagram
 - convention for representing voltage, current and the reference quantity in a phasor diagram
 - drawing phasor diagrams to show the relationship between two or more a.c. values of voltage and/or current
 - determination of phase relationship between two or more sinusoidal waveforms from a given diagram and measurements
- single element a.c. circuits, including:
 - setting up and connecting a single-source resistive a.c. circuit and taking voltage and current measurements to determine the resistance
 - determining the voltage, current resistances from the measurement of given values of any

two of these qualities

- relationship between voltage drops and current in resistive a.c. circuits
- applications of resistive a.c. circuits
- defining ‘inductive reactance’
- calculation of inductive reactance for a given inductor and the relationship between inductive reactance and frequency
- application of Ohm’s law to determine voltage, current of inductive reactance in a purely inductive a.c. circuit given any two to these quantities
- applications of inductive a.c circuits
- calculation of capacitive reactance
- application of Ohm’s law to determine voltage, current or capacitive reactance in a purely capacitive a.c circuit given any two of the quantities
- applications of capacitive a.c circuits
- impedance a.c. circuits, including:
 - impedance and impedance triangle
 - effects of impedance on the neutral and active conductor
 - determining the impedance, current and voltages for a series a.c circuit
 - drawing and labelling the impedance triangle for a series resistor–capacitor (RC) circuit
 - capacitive components in power circuits and systems and the effect on the phase relationship between voltage and current
 - drawing the equivalent circuit of a practical inductor
 - inductive components in power circuits and systems and their effect on the phase relationship between voltage and current
- power in an a.c. circuit, including:
 - difference between true power, apparent power and reactive power and the units in which these quantities are measured
 - power triangle to show the relationships between true power, apparent power and reactive power
 - terms: power factor and phase angle
 - methods used to measure single phase power, energy and demand
- power factor improvement, including:
 - effects of low power factor
 - requirements for power factor improvement
 - methods used to improve low power factor of an installation
 - local supply authority and wiring rules requirements regarding the power factor of an installation and power factor improvement equipment
- harmonics effect in a.c. systems, including:
 - term harmonic in relation to the sinusoidal waveform of an a.c. power system
 - sources in a.c. systems that produce harmonics
 - problems that may arise in a.c. circuits as a result of harmonics and how these are overcome

- methods and test equipment used to test for harmonics
- multi-phase systems, including:
 - features of a multiphase system
 - two-phase systems (230 V/460 V)
 - comparison of voltages generated by single and multi-phase alternators
 - reasons for the adoption of three phases for power systems
 - how three phases are generated in a single alternator
 - calculation of root mean square (r.m.s.) value of voltage generated in each phase given the maximum value
 - relationship between the phase voltages generated in a multi-phase alternator and the conventions for identifying each
 - term phase sequence (also referred to as phase rotation)
 - phase sequence of a multi-phase supply
- single phase systems
- three phase star-connections, including:
 - connecting a three phase star-connection load
 - phase relationship between line and phase voltages and line and phase currents of a star-connected system
 - determining the r.m.s. value of line and phase voltage given any one of these quantities
 - determining the r.m.s. value of line and phase current given any one of these quantities
 - terms balanced load and unbalanced load
 - balanced and unbalanced loads in typical power systems
- three phase four wire systems, including:
 - purpose of the neutral conductor in three phase four wire systems
 - the effects of a high impedance in the neutral conductor of a three phase four wire system supplying an unbalanced load where multiple earthed neutral (MEN) earthing is employed
- three phase delta-connections and interconnected systems, including:
 - connecting three phase delta loads
 - phase relationship between line and phase voltages and line and phase currents of a delta-connected system
 - determining the r.m.s. value of line and phase voltage given any one of these quantities
 - determining the r.m.s. value of line and phase current given any one of these quantities
 - limitations and uses of open delta connections
 - loads in typical power systems
 - typical combinations of three phase interconnected systems using star-connections and a delta connection
 - relationship between line and phase voltages and line and phase currents in the typical interconnected systems using star-connections and delta connections
- fault loop impedance, including:
 - term fault loop impedance of an a.c. power system

- measuring fault loop impedance of typical circuits
- procedures for testing fault loop impedance
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for solving electrical problems in low voltage network circuits in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -
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UEP Electricity Supply Industry - Generation Sector Training Package

Modification History

Not applicable.

Credit Arrangements

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine

Modification History

Release 1. This Skill Set replaces and is equivalent to UEPSS00005 High Risk Licensing - Licence to operate a reciprocating steam engine.

Description

This Skill Set UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine provides the skills and knowledge required to operate reciprocating steam engines within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

Pathways Information

This Skill Set UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

This Skill Set can be a stand-alone licensing outcome, or the unit may be included in a qualification as a core or elective option.

Licensing/Regulatory Information

Personnel seeking certification as a licenced operator of a reciprocating steam engine are to comply with national High Risk Licensing requirements for operators of reciprocating steam engines.

Skill Set Requirements

A total of one unit of competency must be attained.

UEPOPL003 Licence to operate a reciprocating steam engine

Target Group

This is Skill Set UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine is suitable for operators who require occupational licensing by a state or territory work health and safety (WHS)/occupational health and safety (OHS) regulator.

Suggested words for Statement of Attainment

This Skill Set UEPSS00009 High Risk Licensing - Licence to operate a reciprocating steam engine from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum industry requirements for High Risk Licensing of operators of reciprocating steam engines.

Custom Content Section

Not applicable.

UEPSS00010 High Risk Licensing - Licence to operate a steam turbine

Modification History

Release 1. This Skill Set replaces and is equivalent to UEPSS00006 High Risk Licensing - Licence to operate a steam turbine.

Description

This Skill Set UEPSS00010 High Risk Licensing - Licence to operate a steam turbine provides the skills and knowledge required to perform the duties of an operator of steam turbines within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

Pathways Information

This Skill Set UEPSS00010 High Risk Licensing - Licence to operate a steam turbine is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

This Skill Set can be a stand-alone licensing outcome, or the unit may be included in a qualification as a core or elective option.

Licensing/Regulatory Information

Personnel seeking certification as a licenced operator of a steam turbine are to comply with national High Risk Licensing requirements for operators of steam turbines.

Skill Set Requirements

A total of one unit of competency must be attained.

UEPOPL004 Licence to operate a steam turbine

Target Group

This Skill Set UEPSS00010 High Risk Licensing - Licence to operate a steam turbine is suitable for operators who require occupational licencing by a state or territory work health and safety (WHS)/occupational health and safety (OHS) regulator.

Suggested words for Statement of Attainment

This Skill Set UEPSS00010 High Risk Licensing - Licence to operate a steam turbine from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum industry requirements for High Risk Licensing of operators of steam turbines.

Custom Content Section

Not applicable.

UEPSS00011 High Voltage Operation - Development and coordination of H.V. switching programs

Modification History

Release 1. This Skill Set replaces and is equivalent to UEPSS00008 High Voltage Operation - Development and coordination of H.V. switching programs.

Description

This Skill Set UEPSS00011 High Voltage Operation – Development and coordination of H.V. switching programs provides the skills and knowledge required to perform the duties of operating high voltage (H.V.) switching programs within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

It includes developing switching programs where multiple sources of supply must be considered, managed and coordinated, including the control and management of H.V. substations and/or local networks.

Pathways Information

This Skill Set UEPSS00011 High Voltage Operation – Development and coordination of H.V. switching programs is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

The units of competency in this Skill Set can contribute to the completion of relevant Certificate III, Certificate IV and Diploma qualifications from the UEP Electricity Supply Industry - Generation Sector Training Package.

Licensing/Regulatory Information

The skills and knowledge described in this Skill Set do not require a licence to practice in the workplace.

Skill Set Requirements

A total of two units of competency must be attained.

UEPOPS025	Coordinate local H.V. networks
UEPOPS036	Develop H.V. switching programs

Target Group

This Skill Set UEPSS00011 High Voltage Operation – Development and coordination of H.V. switching programs is suitable for operators working in the UEP Electricity Supply Industry - Generation Sector Training Package environment.

Suggested words for Statement of Attainment

This Skill Set UEPSS00011 High Voltage Operation – Development and coordination of H.V. switching programs from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum requirements for the development and coordination of H.V. switching programs.

Custom Content Section

Not applicable.

UEPSS00012 High Voltage Operation - H.V. switching programs

Modification History

Release 1. This Skill Set replaces and is equivalent to UEPSS00007 High Voltage Operation - H.V. switching programs.

Description

This Skill Set UEPSS00012 High Voltage Operation – H.V. switching programs provides the skills and knowledge required to operate H.V. switching programs within the Australian UEP Electricity Supply Industry - Generation Sector Training Package environment.

It includes undertaking the operation of high voltage (H.V.) circuit breaking devices, and the performance of H.V. switching for a given switching program.

Pathways Information

This Skill Set UEPSS00012 High Voltage Operation – H.V. switching programs is part of the UEP Electricity Supply Industry - Generation Sector Training Package.

The units of competency in this Skill Set can contribute to the completion of relevant Certificate III, Certificate IV and Diploma qualifications from the UEP Electricity Supply Industry - Generation Sector Training Package.

Licensing/Regulatory Information

The skills and knowledge described in this Skill Set do not require a licence to practice in the workplace.

Skill Set Requirements

A total of two units of competency must be attained.

UEPOPS116	Operate local H.V. switchgear
UEPOPS124	Perform switching to a switching program

Target Group

This Skill Set UEPSS00012 High Voltage Operation – H.V. switching programs is suitable for operators working in the UEP Electricity Supply Industry - Generation Sector Training Package environment

Suggested words for Statement of Attainment

This Skill Set UEPSS00012 High Voltage Operation – H.V. switching programs from the UEP Electricity Supply Industry - Generation Sector Training Package meets the minimum requirements for the development and coordination of H.V. switching programs.

Custom Content Section

Not applicable.