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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

PMA20116 Certificate II in Process Plant Operations

Modification History

Release 2. Elective unit codes and titles updated. Supersedes and equivalent to PMA20116 Certificate II in Process Plant Operations (Release 1).

Release 1. Supersedes and is equivalent to PMA20113 Certificate II in Process Plant Operations.

Qualification Description

The PMA20116 Certificate II in Process Plant Operations is a technical qualification for operators in the hydrocarbons, petrochemical, chemical, metal/ore processing and related process manufacturing industry sectors. It is intended for competent operators who operate production equipment or undertake similar roles directly producing products. The operator would apply a breadth and depth of knowledge to a defined range of situations and would be expected to apply this knowledge to solve a defined range of problems by applying known solutions to a limited range of predictable problems.

Other non-technical Certificate II qualifications are available for production support employees at this level, such as MSM20116 Certificate II in Process Manufacturing.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

To be awarded the PMA20116 Certificate II in Process Plant Operations competency must be achieved in **sixteen** (**16**) units of competency:

- **five** (**5**) core units of competency
- **eleven** (**11**) elective units of competency, chosen as specified below:
  - a minimum of **four** (**4**) units of competency from Group A
  - the remainder may be chosen from Groups A, B and C (with a maximum of **five** (**5**) from Group C) to bring the total number of electives to **eleven** (**11**).

Note: **Three** (**3**) of the Group C units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, where those units are packaged in a Certificate II.

Note: Where prerequisite units are identified they must be counted in the total number of units

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required for achievement of the qualification.

Core units of competency

Complete all **five (5)** units from the following list.

Unit code	**Unit title**
MSMENV272	Participate in environmentally sustainable work practices
MSMSUP100	Apply workplace context to own job
MSMSUP102	Communicate in the workplace
MSMWHS110	Follow emergency response procedures
MSMWHS200	Work safely

ELECTIVE UNITS

Group A – Technical electives

Unit code	**Unit title**	**Prerequisites**
FBPPHM3001	Apply Good Manufacturing Practice requirements	
MEM04001B	Operate melting furnaces	MEM13004B
MSMOPS200	Operate equipment	
MSMOPS212	Use organisation computers or data systems	
PMAOPS201	Operate fluid flow equipment	
PMAOPS202	Operate fluid mixing equipment	
PMAOPS204	Select and use utilities and services	
PMAOPS205	Operate heat exchangers	
PMAOPS208	Operate chemical separation equipment	
PMAOPS210	Operate solids handling equipment	

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PMAOPS211	Operate manufacturing extrusion systems	
PMAOPS213	Package product/material	
PMAOPS216	Operate local control system	
PMAOPS217	Operate wet milling equipment	
PMAOPS220	Monitor chemical reactions in the process	
PMAOPS221	Operate and monitor prime movers	
PMAOPS222	Operate and monitor pumping systems and equipment	PMAOPS221 or PMAOPS331
PMAOPS223	Operate and monitor valve systems	
PMAOPS224	Provide fluids for utilities and support	
PMAOPS226	Monitor and operate flare systems	
PMAOPS230	Monitor, operate and maintain pipeline stations and equipment	
PMAOPS231	Control gas odourisation	
PMAOPS232	Operate filtration equipment	
PMAOPS233	Monitor wells and gathering systems	
PMAOPS234	Monitor and operate low pressure compressors	
PMAOPS236	Monitor continuous process plant	
PMAOPS240	Store fluids in bulk	
PMAOPS241	Operate Joule-Thomson effect device	
PMAOPS242	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS246	Operate separation equipment	
PMAOPS247	Operate powered separation equipment	
PMAOPS260	Conduct screening operations	
PMAOPS261	Operate bulk solids loading equipment	

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PMAOPS262	Operate digestion equipment	
PMAOPS263	Operate leaching equipment	
PMAOPS264	Operate solvent extraction equipment	
PMAOPS265	Operate magnetic/electrical separation equipment	
PMAOPS280	Interpret process plant schematics	
PMAOPS290	Operate a biotreater	
PMAOPS331	Operate and troubleshoot a gas turbine system	
PMASMELT260	Form carbon anodes	
PMASMELT261	Bake carbon anodes	
PMASMELT262	Clean and strip anode rods	
PMASMELT263	Spray carbon anodes	
PMASMELT264	Start up reduction cells	
PMASMELT265	Operate reduction cells	
PMASMELT266	Deliver molten metal	
PMASMELT267	Cast ingots	
PMASMELT268	Operate vertical direct casting process	
PMASMELT269	Operate cell tending equipment	
PMASMELT270	Supply product from reduction cells	
MSMPMC302	Operate equipment to blend/mix materials	
MSMPMC303	Operate grinding equipment	
MSMPMC306	Operate crushing equipment	
MSMPMC324	Move materials	
UEPOPS319	Operate and monitor gas production plant	
One (**1**) unit may be chosen from Group A in PMA30116 Certificate III in Process Plant		

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Operations

Group B –Support electives

Unit code	Unit title	Prerequisites
HLTAID011	Provide first aid	
MEM05012C	Perform routine manual metal arc welding	
MEM09002B	Interpret technical drawing	
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	
MSL952001	Collect routine site samples	
MSMPER200	Work in accordance with an issued permit	
MSMPER201	Monitor and control work permits	
MSMPER202	Observe permit work	
MSMPER205	Enter confined space	MSMPER200
MSMSUP200	Achieve work outcomes	
MSMSUP204	Pack products or materials	
MSMSUP205	Transfer loads	
MSMSUP210	Process and record information	
MSMSUP240	Undertake minor maintenance	
MSMSUP273	Handle goods	
MSMSUP280	Manage conflict at work	
MSMSUP291	Participate in continuous improvement	
MSMSUP292	Sample and test materials and product	
MSMWHS201	Conduct hazard analysis	

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MSMWHS205	Control minor incidents	
MSMWHS210	Undertake first response to non-fire incidents	
MSMWHS212	Undertake first response to fire incidents	
MSMWHS216	Operate breathing apparatus	
MSMWHS217	Gas test atmospheres	
MSMWHS218	Control the risks of falls	
MSS402002	Sustain process improvements	
MSS402082	Apply cost factors to work practices	
MSS402031	Interpret product costs in terms of customer requirements	
MSS402040	Apply 5S procedures	
MSS402050	Monitor process capability	
MSS402051	Apply quality standards	
MSS402083	Use planning software systems in operations	
MSS402080	Undertake root cause analysis	
MSS402081	Contribute to the application of a proactive maintenance strategy	
PMAOMIR210	Control evacuation to muster point	
PMASUP236	Operate vehicles in the field	
PMASUP237	Undertake crane, dogging and load transfer operations	
PMASUP241	Maintain pipeline easements	
PMASUP242	Monitor pipeline civil works	
PMASUP243	Monitor and maintain pipeline coatings	
PMASUP244	Prepare and isolate plant	
PMASUP245	Break and make flanged joints using hand tools	

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PMASUP246	Disconnect and reconnect non-flared tube fitting joints	
PMAWHS211	Prepare equipment for emergency response	
PMAWHS213	Undertake fire control and emergency rescue	
PMAWHS214	Undertake helicopter safety and escape	
PMAWHS215	Apply offshore facility abandonment and sea survival procedures and practices	
PMAWHS221	Maintain first aid resources and records	
TLID2010	Operate a forklift	

Group C – Other electives

Unit code	**Unit title**	**Prerequisites**
FBPPHM2001	Follow work procedures to maintain Good Manufacturing Practice requirements	
MEM11011B	Undertake manual handling	
MSMOPS100	Use equipment	
MSMOPS102	Perform tasks to support production	
MSMSUP101	Clean workplace or equipment	
MSMSUP106	Work in a team	
MSMENV172	Identify and minimise environmental hazards	
MSMWHS100	Follow WHS procedures	
PMAOPS101	Read dials and indicators	
PMAOPS105	Select and prepare materials	

Up to **three** (3) relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are packaged in a Certificate II.

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Qualification Mapping Information

Release 2. Supersedes and is equivalent to PMA20116 Certificate II in Process Plant Operations (Release 1).

Release 1. Supersedes and is equivalent to PMA20113 Certificate II in Process Plant Operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMA30120 Certificate III in Process Plant Operations

Modification History

Release 1. Seven specialisations added, packaging rules amended, 20 new PMAOPS coded units added and listed elective units reduced. Supersedes and equivalent to PMA30116 Certificate III in Process Plant Operations.

Qualification Description

This qualification reflects the role of advanced operators and operations technicians who use production equipment to directly produce product. At this level, operators/technicians undertake advanced operations, typically of integrated plant units in accordance with the operating procedures and apply their knowledge to anticipate problems. They are expected to solve a range of foreseen and unforeseen problems, using product and process knowledge to develop solutions to problems that do not have a known solution or a solution recorded in the procedures.

Entry Requirements

Nil

Packaging Rules

To be awarded the PMA30120 Certificate III in Process Plant Operations competency must be achieved in **twenty-one (21)** units of competency:

- 5 core units
- 16 elective units, consisting of:
  - at least 14 different units from the electives listed below
  - up to 2 units from any endorsed training package or accredited course – these units must be relevant to the work outcome.

Any combination of electives that meets the rules above can be selected for the award of the PMA30120 Certificate III in Process Plant Operations. Where appropriate, electives may be packaged to provide a qualification with a specialisation.

Packaging for each specialisation:

- All units in Group A and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (Offshore Oil Upstream)*
- All units in Group B and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (Gas/LNG Upstream)*
- All units in Group C and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (Gas/LNG Downstream)*

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- All units in Group D and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (Utilities)*
- All units in Group E and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (CSG Plant)*
- All units in Group F and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (CSG Well)*
- All units in Group G and Group H electives must be selected for award of the *Certificate III in Process Plant Operations (CSG Pipelines)*

Complete all **five (5)** units from the following list:

Core Units		
Unit Code	**Unit Title**	**Prerequisites**
MSMENV272	Participate in environmentally sustainable work practices	
MSMSUP100	Apply workplace context to own job	
MSMSUP102	Communicate in the workplace	
MSMWHS110	Follow emergency response procedures	
MSMWHS200	Work safely	

Group A electives: Offshore Oil Upstream specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS246	Operate separation equipment	
PMAOPS322	Undertake well management	
PMAOPS357	Operate and troubleshoot produced water and water injection systems	
PMAOPS363	Operate and troubleshoot export systems	
Plus		
PMAOPS336	Operate and troubleshoot fixed-bed adsorption system	
Or		
PMAOPS334	Operate and troubleshoot gas absorption system	

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Group B electives: Gas/LNG Upstream specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS322	Undertake well management	
PMAOPS363	Operate and troubleshoot export systems	
PMAOPS370	Operate and troubleshoot condensate stabilisation systems	
Plus		
PMAOPS336	Operate and troubleshoot fixed-bed adsorption system	
Or		
PMAOPS334	Operate and troubleshoot gas absorption system	

Group C electives: Gas/LNG Downstream specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS310	Operate and troubleshoot distillation system	
PMAOPS336	Operate and troubleshoot fixed-bed adsorption system	
PMAOPS341	Operate and troubleshoot cryogenic processes	
PMAOPS343	Transfer bulk fluids into/out of storage facility	
PMAOPS346	Operate and troubleshoot liquefaction process	

Group D electives: Utilities specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS204	Select and use utilities and services	
PMAOPS332	Generate electrical power	
PMAOPS349	Operate and troubleshoot hydraulic systems	

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Group D electives: Utilities specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS352	Operate and troubleshoot instrument and plant air systems	
PMAOPS354	Operate and troubleshoot inert gas generation systems	
PMAOPS355	Operate and troubleshoot fuel systems	
PMAOPS356	Operate and troubleshoot water treatment systems	
PMAOPS367	Operate and troubleshoot cooling water systems	
PMAOPS368	Operate and troubleshoot heating medium/hot oil systems	
PMAOPS369	Operate and troubleshoot drain and vent systems	

Group E electives: CSG Plant specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS205	Operate heat exchangers	
PMAOPS223	Operate and monitor valve systems	
PMAOPS246	Operate separation equipment	
PMAOPS280	Interpret process plant schematics	
PMAOPS306	Operate and troubleshoot production unit	
PMAOPS314	Operate and troubleshoot compressor systems	
Plus		
PMAOPS201	Operate fluid flow equipment	
Or		
PMAOPS222	Operate and monitor pumping systems and equipment	PMAOPS221 Operate and monitor prime movers **OR** PMAOPS324 Operate a gas turbine

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Group F electives: CSG Well specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS223	Operate and monitor valve systems	
PMAOPS233	Monitor wells and gathering systems	
PMAOPS280	Interpret process plant schematics	
PMAOPS318	Conduct artificial lift	
PMAOPS339	Operate and troubleshoot wells and gathering systems	
Plus		
PMAOPS201	Operate fluid flow equipment	
Or		
PMAOPS222	Operate and monitor pumping systems and equipment	PMAOPS221 Operate and monitor prime movers **OR** PMAOPS324 Operate a gas turbine

Group G electives: CSG Pipeline specialisation		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS216	Operate local control system	
PMAOPS223	Operate and monitor valve systems	
PMAOPS230	Monitor, operate and maintain pipeline stations and equipment	
PMAOPS280	Interpret process plant schematics	
PMAOPS338	Communicate and monitor pipeline activities	
PMAOPS342	Conduct pipeline pigging	
PMASUP241	Maintain pipeline easements	

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Group H electives: Tradecraft and permit to work/isolations		
Unit Code	**Unit Title**	**Prerequisites**
MSMPER201	Monitor and control work permits	
MSMSUP240	Undertake minor maintenance	
MSMSUP303	Identify equipment faults	
MSMWHS201	Conduct hazard analysis	
PMAOPS347	Create and conduct isolations in the workplace	PMASUP244 Prepare and isolate plant
PMASUP244	Prepare and isolate plant	

Other electives		
Unit Code	**Unit Title**	**Prerequisites**
HLTAID011	Provide First Aid	
HLTAID013	Provide First Aid in remote or isolated site	
HLTAID014	Provide advanced First Aid	
MEM07033	Operate and monitor basic boiler	MEM11011, MEM13015, MEM16006
MEM09002	Interpret technical drawing	MEM12023, MEM12024, MEM13015, MEM16006
MEM09003	Prepare basic engineering drawing	MEM09002, MEM12023, MEM12024, MEM13015, MEM16006
MEM11011	Undertake manual handling	MEM13015, MEM16006
MEM12023	Perform engineering measurements	MEM13015, MEM16006
MEM12024	Perform computations	MEM13015, MEM16006
MEM13015	Work safely and effectively in manufacturing and engineering	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
MEM16006	Organise and communicate information	MEM13015
MEM18011	Shut down and isolate machines/equipment	MEM11011, MEM13015, MEM16006
MSL952001	Collect routine site samples	
MSL973013	Perform basic tests	
MSMBLIC001	Licence to operate a standard boiler	
MSMBLIC002	Licence to operate an advanced boiler	
MSMOPS100	Use equipment	
MSMOPS200	Operate equipment	
MSMOPS212	Use organisation computers or data systems	
MSMPER200	Work in accordance with an issued permit	
MSMPER202	Observe permit work	
MSMPER205	Enter confined space	MSMPER200 Work in accordance with an issued permit
MSMPER300	Issue work permits	MSMWHS201 Conduct hazard analysis
MSMPMC303	Operate grinding equipment	
MSMPMC306	Operate crushing equipment	
MSMSUP101	Clean workplace or equipment	
MSMSUP106	Work in a team	
MSMSUP200	Achieve work outcomes	
MSMSUP210	Process and record information	
MSMSUP292	Sample and test materials and product	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
MSMSUP300	Identify and apply process improvements	
MSMSUP310	Contribute to the development of workplace documentation	
MSMSUP330	Develop and adjust a production schedule	
MSMSUP382	Provide coaching/mentoring in the workplace	
MSMSUP383	Facilitate a team	
MSMSUP390	Use structured problem-solving tools	
MSMWHS100	Follow WHS procedures	
MSMWHS205	Control minor incidents	
MSMWHS210	Undertake first response to non-fire incidents	
MSMWHS212	Undertake first response to fire incidents	
MSMWHS216	Operate breathing apparatus	
MSMWHS217	Gas test atmospheres	
MSMWHS218	Control the risks of falls	
MSMWHS300	Facilitate the implementation of WHS for a work group	
MSMWHS401	Assess risk	
MSS402002	Sustain process improvements	
MSS402040	Apply 5S procedures	
MSS402050	Monitor process capability	
MSS402080	Undertake root cause analysis	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
MSS402081	Contribute to the application of a proactive maintenance strategy	
MSS402082	Apply cost factors to work practices	
MSS402083	Use planning software systems in operations	
PMAOMIR301	Undertake initial rescue	
PMAOMIR302	Respond to a helideck incident	
PMAOMIR306	Operate control panel during an emergency	
PMAOMIR323	Manage communication systems during an incident	
PMAOMIR322	Manage incident response information	
PMAOMIR346	Assess and secure an incident site	
PMAOPS101	Read dials and indicators	
PMAOPS105	Select and prepare materials	
PMAOPS202	Operate fluid mixing equipment	
PMAOPS208	Operate chemical separation equipment	
PMAOPS210	Operate solids handling equipment	
PMAOPS211	Operate manufacturing extrusion systems	
PMAOPS213	Package product/material	
PMAOPS217	Operate wet milling equipment	
PMAOPS220	Monitor chemical reactions in the process	
PMAOPS221	Operate and monitor prime movers	
PMAOPS224	Provide fluids for utilities and support	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS231	Control gas odourisation	
PMAOPS232	Operate filtration equipment	
PMAOPS234	Monitor and operate low pressure compressors	
PMAOPS236	Monitor continuous process plant	
PMAOPS240	Store fluids in bulk	
PMAOPS241	Operate Joule-Thomson effect device	
PMAOPS242	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS247	Operate powered separation equipment	
PMAOPS260	Conduct screening operations	
PMAOPS261	Operate bulk solids loading equipment	
PMAOPS262	Operate digestion equipment	
PMAOPS290	Operate a biotreater	
PMAOPS309	Operate solids handling/storage facility	
PMAOPS311	Operate and troubleshoot reactors and reaction equipment	
PMAOPS313	Operate and troubleshoot furnaces to induce reaction	
PMAOPS315	Operate and troubleshoot process control systems	
PMAOPS316	Organise storage and logistics of general materials	
PMAOPS317	Undertake ship transfer operations	
PMAOPS319	Adjust batch	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
PMAOPS328	Operate and troubleshoot heating furnace	
PMAOPS331	Operate and troubleshoot gas turbine system	
PMAOPS344	Operate and troubleshoot flare system	
PMAOPS345	Operate and troubleshoot gas treatment process	
PMAOPS348	Operate safety, protection and shutdown systems	
PMAOPS351	Operate and troubleshoot turret swivel systems	
PMAOPS353	Operate and troubleshoot heating, ventilation and air conditioning systems	
PMAOPS358	Process design fundamentals	
PMAOPS359	Operate and troubleshoot process measurement and control systems	
PMAOPS360	Operate a metalliferous kiln/furnace	
PMAOPS361	Operate a smelting furnace	
PMAOPS362	Operate a blast furnace	
PMAOPS364	Operate an electrochemical process	
PMAOPS365	Operate pelletising equipment	
PMAOPS366	Operate sintering equipment	
PMAOPS390	Operate a biochemical process	
PMAOPS405	Operate complex control systems	
PMAOPS411	Manage plant shutdown and restart	
PMASMELT260	Form carbon anodes	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
PMASMELT261	Bake carbon anodes	
PMASMELT262	Clean and strip anode rods	
PMASMELT263	Spray carbon anodes	
PMASMELT264	Start up reduction cells	
PMASMELT265	Operate reduction cells	
PMASMELT266	Deliver molten metal	
PMASMELT267	Cast ingots	
PMASMELT268	Operate vertical direct casting process	
PMASMELT269	Operate cell tending equipment	
PMASMELT270	Supply product from reduction cells	
PMASUP236	Operate vehicles in the field	
PMASUP245	Break and make flanged joints using hand tools	
PMASUP246	Disconnect and reconnect non-flared tube fitting joints	
PMASUP305	Operate offshore cranes	
PMASUP311	Operate communications hub	
PMASUP349	Monitor and control repairs and modifications on operational pipe	
PMASUP345	Monitor vibration	
PMASUP348	Monitor and maintain cathodic protection systems	
PMAWHS211	Prepare equipment for emergency response	
PMAWHS213	Undertake fire control and emergency rescue	

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Other electives		
Unit Code	**Unit Title**	**Prerequisites**
PMAWHS310	Investigate incidents	
PMAWHS311	Lead emergency teams	
PSPGEN015	Work effectively with diversity	
RIIPBE203D	Conduct precipitation operations	
RIIPBE301D	Conduct calcinations activities	
RIIPBE308D	Conduct thickening and clarifying process	
RIIRIS201E	Conduct local risk control	
TAEASS301	Contribute to assessment	
TAEDEL301	Provide work skill instruction	
TLID2010	Operate a forklift	
UEPOPL001	Licence to operate a steam turbine	

Qualification Mapping Information

Release 1. Supersedes and equivalent to PMA30116 Certificate III in Process Plant Operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMA40116 Certificate IV in Process Plant Technology

Modification History

Release 2. Elective unit codes and titles updated. Supersedes and is equivalent to PMA40116 Certificate IV in Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA40113 Certificate IV in Process Plant Technology.

Qualification Description

The PMA40116 Certificate IV in Process Plant Technology is a technical qualification for plant technicians and operations technicians who will typically be involved in solving complex problems which require theoretical knowledge, combined with an understanding of the production process and equipment across the plant. This qualification is typically used to develop employees performing a technical role that includes an ability to work independently and conduct technical problem solving according to the needs of the work in the chemical, hydrocarbons and refining industries.

Other non-technical Certificate IV qualifications are available for production support employees at this level, such as MSM40116 Certificate IV in Process Manufacturing.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

To be awarded the PMA40116 Certificate IV in Process Plant Technology competency must be achieved in **twenty-six (26)** units of competency:

- **five (5)** core units of competency
- **twenty-one (21)** elective units of competency, chosen as specified below:
- a minimum of **one (1)** unit of competency from Group A
- the remainder may be chosen from Groups A, B and C (with a maximum of **eighteen (18)** from Group C) to bring the total number of electives to **twenty-one (21).**

Note: **Five (5)** elective units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups B and C.

Note: Where prerequisite units are identified they must be counted in the total number of units required for achievement of the qualification.

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Core units of competency

Complete all **five (5)** units from the following list.

Unit code	Unit title
MSMENV272	Participate in environmentally sustainable work practices
MSMSUP100	Apply workplace context to own job
MSMSUP102	Communicate in the workplace
MSMWHS110	Follow emergency response procedures
MSMWHS200	Work safely

ELECTIVE UNITS

Group A – Technical electives

Unit code	Unit title	Prerequisites
MSMOPS400	Optimise process/plant area	
MSMOPS401	Trial new process or product	
PMAOPS402	Respond to abnormal process situations	MSMSUP390
PMAOPS405	Operate complex control systems	
PMAOPS410	Operate remote production facilities	
PMAOPS411	Manage plant shutdown and restart	
PMAOPS433	Manage wells and gathering systems	
PMAOPS434	Commission wells and gathering systems	
PMAOPS450	Solve colour problems	
PMAOPS460	Monitor and operate tailings management facilities	

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Group B – Support electives

Unit code	Unit title	Prerequisites
MSMENV472	Implement and monitor environmentally sustainable work practices	
MSL954004	Obtain representative samples in accordance with sampling plan	
MSMPER400	Coordinate permit process	MSMPER300
MSMSUP400	Develop and monitor quality systems	
MSMSUP404	Coordinate maintenance	
MSMSUP405	Identify problems in fluid power system	
MSMSUP406	Identify faults in electronic control	
MSMWHS400	Contribute to WHS management system	
MSMWHS401	Assess risk	
MSS403085	Ensure process improvements are sustained	
MSS403011	Facilitate implementation of competitive systems and practices	
MSS405013	Facilitate holistic culture improvement in an organisation	
MSS403086	Improve cost factors in work practices	
MSS403040	Facilitate and improve implementation of 5S	
MSS403054	Facilitate breakthrough improvements	
MSS403087	Mistake proof an operational process	
MSS404084	Undertake process capability improvements	
MSS404060	Facilitate the use of planning software systems in a work area or team	
MSS404085	Undertake proactive maintenance analyses	

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MSS404086	Assist in implementing a proactive maintenance strategy	
MSS405052	Design an experiment	MSS404054
PMAOMIR306	Operate control panel during an emergency	PMAOPS315
PMAOMIR407	Audit incident preparedness and established response systems	
PMAOMIR418	Coordinate incident response	
PMAOMIR424	Develop and maintain community relationships	
PMAOMIR430	Conduct and assess incident exercises	
PMAOMIR444	Develop incident containment tactics	
PMAOMIR449	Monitor legal compliance obligations during incidents	
PMASUP410	Develop plant documentation	
PMASUP420	Minimise environmental impact of process	
PMASUP432	Coordinate pipeline projects	MSMPER300
PMASUP440	Commission/recommission plant	
PMASUP441	Decommission plant	
PMASUP444	Plan plant preparation and isolation	
PMASUP445	Participate in HAZOP studies	PMAOPS280
PMAWHS420	Develop first aid procedures and manage resources	
TAEASS401	Plan assessment activities and processes	
TAEASS402	Assess competence	
TAEASS403	Participate in assessment validation	
TAEASS502	Design and develop assessment tools	
Up to **one** (1) relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where that unit is packaged in a Certificate IV or Diploma.		

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Group C – Other electives

Unit code	Unit title	Prerequisites
FBPPHM2001	Follow work procedures to maintain Good Manufacturing Practice requirements	
FBPPHM3001	Apply Good Manufacturing Practice requirements	
HLTAID011	Provide First Aid	
MEM04001B	Operate melting furnaces	MEM13004B
MEM05012C	Perform routine manual metal arc welding	
MEM09002B	Interpret technical drawing	
MEM09003B	Prepare basic engineering drawing	MEM09002B
MEM11011B	Undertake manual handling	
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	
MEM18011C	Shut down and isolate machine/equipment	
MSMBLIC001	Licence to operate a standard boiler	
MSMBLIC002	Licence to operate an advanced boiler	
MSL952001	Collect routine site samples	
MSL973013	Perform basic tests	
MSMENV172	Identify and minimise environmental hazards	
MSMOPS100	Use equipment	
MSMOPS102	Perform tasks to support production	
MSMOPS200	Operate equipment	

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MSMOPS212	Use organisation computers or data systems	
MSMPER200	Work in accordance with an issued permit	
MSMPER201	Monitor and control work permits	
MSMPER202	Observe permit work	
MSMPER205	Enter confined space	MSMPER200
MSMPER300	Issue work permits	MSMWHS201
MSMSUP101	Clean workplace or equipment	
MSMSUP106	Work in a team	
MSMSUP200	Achieve work outcomes	
MSMSUP204	Pack products or materials	
MSMSUP205	Transfer loads	
MSMSUP210	Process and record information	
MSMSUP240	Undertake minor maintenance	
MSMSUP273	Handle goods	
MSMSUP280	Manage conflict at work	
MSMSUP291	Participate in continuous improvement	
MSMSUP292	Sample and test materials and product	
MSMSUP300	Identify and apply process improvements	
MSMSUP301	Apply HACCP to the workplace	
MSMSUP303	Identify equipment faults	
MSMSUP309	Maintain and organise workplace records	
MSMSUP310	Contribute to the development of workplace documentation	
MSMSUP330	Develop and adjust a production schedule	
MSMSUP382	Provide coaching/mentoring in the workplace	

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MSMSUP383	Facilitate a team	
MSMSUP390	Use structured problem-solving tools	
MSMWHS100	Follow WHS procedures	
MSMWHS201	Conduct hazard analysis	
MSMWHS205	Control minor incidents	
MSMWHS210	Undertake first response to non-fire incidents	
MSMWHS212	Undertake first response to fire incidents	
MSMWHS216	Operate breathing apparatus	
MSMWHS217	Gas test atmospheres	
MSMWHS218	Control the risks of falls	
MSMWHS300	Facilitate the implementation of WHS for a work group	MSMWHS200
MSS402002	Sustain process improvements	
MSS402082	Apply cost factors to work practices	
MSS402031	Interpret product costs in terms of customer requirements	
MSS402040	Apply 5S procedures	
MSS402050	Monitor process capability	
MSS402051	Apply quality standards	
MSS402083	Use planning software systems in operations	
MSS402080	Undertake root cause analysis	
MSS402081	Contribute to the application of a proactive maintenance strategy	
PMAOMIR210	Control evacuation to muster point	
PMAOMIR301	Undertake initial rescue	MSMWHS216 MSMWHS217 HLTAID003

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PMAOMIR302	Respond to a helideck incident	
PMAOMIR317	Facilitate search and rescue operations	
PMAOMIR322	Manage incident response information	
PMAOMIR323	Manage communication systems during an incident	
PMAOMIR346	Assess and secure an incident site	
PMAOPS101	Read dials and indicators	
PMAOPS105	Select and prepare materials	
PMAOPS201	Operate fluid flow equipment	
PMAOPS202	Operate fluid mixing equipment	
PMAOPS204	Select and use utilities and services	
PMAOPS205	Operate heat exchangers	
PMAOPS208	Operate chemical separation equipment	
PMAOPS210	Operate solids handling equipment	
PMAOPS211	Operate manufacturing extrusion systems	
PMAOPS213	Package product/material	
PMAOPS216	Operate local control system	
PMAOPS217	Operate wet milling equipment	
PMAOPS220	Monitor chemical reactions in the process	
PMAOPS221	Operate and monitor prime movers	
PMAOPS222	Operate and monitor pumping systems and equipment	PMAOPS221 OR PMAOPS324
PMAOPS223	Operate and monitor valve systems	
PMAOPS224	Provide fluids for utilities and support	
PMAOPS226	Monitor and operate flare systems	
PMAOPS230	Monitor, operate and maintain pipeline stations	

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	and equipment	
PMAOPS231	Control gas odourisation	
PMAOPS232	Operate filtration equipment	
PMAOPS233	Monitor wells and gathering systems	
PMAOPS234	Monitor and operate low pressure compressors	
PMAOPS236	Monitor continuous process plant	
PMAOPS240	Store fluids in bulk	
PMAOPS241	Operate Joule-Thomson effect device	
PMAOPS242	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS246	Operate separation equipment	
PMAOPS247	Operate powered separation equipment	
PMAOPS260	Conduct screening operations	
PMAOPS261	Operate bulk solids loading equipment	
PMAOPS262	Operate digestion equipment	
PMAOPS263	Operate leaching equipment	
PMAOPS264	Operate solvent extraction equipment	
PMAOPS265	Operate magnetic/electrical separation equipment	
PMAOPS280	Interpret process plant schematics	
PMAOPS290	Operate a biotreater	
PMAOPS306	Operate and troubleshoot production unit	
PMAOPS310	Operate and troubleshoot distillation system	
PMAOPS311	Operate and troubleshoot reactors and reaction equipment	
PMAOPS313	Operate and troubleshoot furnaces to induce reaction	

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PMAOPS314	Operate and troubleshoot compressor systems	
PMAOPS315	Operate and troubleshoot process control systems	
PMAOPS343	Transfer bulk fluids into/out of storage facility	
PMAOPS316	Organise storage and logistics of general materials	
PMAOPS309	Operate solids handling/storage facility	
PMAOPS317	Undertake ship transfer operations	
PMAOPS319	Adjust batch	
PMAOPS318	Conduct artificial lift	
PMAOPS322	Undertake well management	
PMAOPS328	Operate and troubleshoot heating furnace	
PMAOPS331	Operate and troubleshoot gas turbine system	
PMAOPS332	Generate electrical power	
PMAOPS334	Operate and troubleshoot gas absorption system	
PMAOPS336	Operate and troubleshoot fixed-bed adsorption system	
PMAOPS337	Operate and troubleshoot liquid extraction system	
PMAOPS338	Communicate and monitor pipeline activities	
PMAOPS339	Operate and troubleshoot wells and gathering systems	
PMAOPS342	Conduct pipeline pigging	
PMAOPS341	Operate and troubleshoot cryogenic processes	
PMAOPS350	Match and adjust colour	
PMAOPS360	Operate a metalliferous kiln/furnace	
PMAOPS361	Operate a smelting furnace	

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PMAOPS362	Operate a blast furnace	
PMAOPS364	Operate an electrochemical process	
PMAOPS365	Operate pelletising equipment	
PMAOPS366	Operate sintering equipment	
PMAOPS390	Operate a biochemical process	
PMASMELT260	Form carbon anodes	
PMASMELT261	Bake carbon anodes	
PMASMELT262	Clean and strip anode rods	
PMASMELT263	Spray carbon anodes	
PMASMELT264	Start up reduction cells	
PMASMELT265	Operate reduction cells	
PMASMELT266	Deliver molten metal	
PMASMELT267	Cast ingots	
PMASMELT268	Operate vertical direct casting process	
PMASMELT269	Operate cell tending equipment	
PMASMELT270	Supply product from reduction cells	
PMASUP236	Operate vehicles in the field	
PMASUP237	Undertake crane, dogging and load transfer operations	
PMASUP241	Maintain pipeline easements	
PMASUP242	Monitor pipeline civil works	
PMASUP243	Monitor and maintain pipeline coatings	
PMASUP244	Prepare and isolate plant	
PMASUP245	Break and make flanged joints using hand tools	
PMASUP246	Disconnect and reconnect non-flared tube fitting joints	

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PMASUP305	Operate Offshore Cranes	
PMASUP311	Operate communications hub	
PMASUP341	Monitor and maintain instrument and control systems	MSMPER300
PMASUP342	Monitor and maintain electrical systems	MSMPER300
PMASUP348	Monitor and maintain cathodic protection systems	
PMASUP349	Monitor and control repairs and modifications on operational pipe	
PMASUP345	Monitor vibration	
PMASUP350	Control corrosion	
PMASUP347	Undertake corrosion inspection on process plant	
PMAWHS211	Prepare equipment for emergency response	
PMAWHS213	Undertake fire control and emergency rescue	
PMAWHS214	Undertake helicopter safety and escape	
PMAWHS215	Apply offshore facility abandonment and sea survival procedures and practices	
PMAWHS221	Maintain first aid resources and records	
PMAWHS310	Investigate incidents	
PMAWHS311	Lead emergency teams	
PMAWHS312	Command the operation of survival craft	
PMAWHS320	Provide advanced first aid response	HLTAID003
PMAWHS321	Provide first aid response in remote and/or isolated area	HLTAID003
MSMPMC302	Operate equipment to blend/mix materials	
MSMPMC303	Operate grinding equipment	
MSMPMC306	Operate crushing equipment	

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MSMPMC324	Move materials	
PSPGEN015	Work effectively with diversity	
TAEASS301	Contribute to assessment	
TAEDEL301	Provide work skill instruction	
TLID2010	Operate a forklift	
UEPOPL001	Licence to operate a steam turbine	
UEPOPS319	Operate and monitor gas production plant	
Up to **four** (4) relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are packaged in a Certificate II, III or IV.		

Qualification Mapping Information

Release 2. Supersedes and is equivalent to PMA40116 Certificate IV in Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA40113 Certificate IV in Process Plant Technology.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMA50116 Diploma of Process Plant Technology

Modification History

Release 2. Elective unit updated to current release. Supersedes and is equivalent to PMA50116 Diploma of Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA50108 Diploma of Process Plant Technology.

Qualification Description

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

To be awarded the PMA50116 Diploma of Process Plant Technology competency must be achieved in **ten (10)** units of competency:

- **four (4)** core units of competency
- **six (6)** elective units of competency, chosen as specified below:
  - a minimum of **two (2)** from Group A
  - the remainder may be chosen from Groups A, B and C (with a maximum of **two (2)** from Group C) to bring the total number of electives to **six (6)**.

Note: Two (2) elective units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Group C.

Note: Where prerequisite units are identified they must be counted in the total number of units required for achievement of the qualification.

Core units of competency

Complete all **four (4)** units from the following list.

Unit code	Unit title
MSMENV272	Participate in environmentally sustainable work practices
MSMSUP200	Achieve work outcomes
MSMSUP210	Process and record information

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MSMWHS200	Work safely

ELECTIVE UNITS

Group A – Technical electives

Unit code	**Unit title**	**Prerequisites**
PMAOPS500	Optimise production systems	
PMAOPS501	Provide operational expertise to a project team	
PMAOPS505	Control the process during abnormal situations	
PMAOPS511	Determine energy transfer loads	
PMAOPS512	Determine mass transfer loads	
PMAOPS520	Manage utilities	
PMAOPS521	Plan plant shutdown	
PMAOPS522	Coordinate plant shutdown	
PMAOPS550	Develop a colour formulation	PMAOPS350 PMAOPS450
PMAOPS560	Plan and design tailings management facilities	

Up to **one (1)** technical elective unit may be chosen from Group A in PMA60116 Advanced Diploma of Process Plant Technology

Group B – Support electives

Unit code	**Unit title**	**Prerequisites**
MSMWHS503	Maintain WHS management system	
MSMWHS510	Manage risk	

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PMAOMIR512	Establish incident response preparedness and response systems	
PMAOMIR523	Manage corporate media requirements in a crisis	
PMAOMIR575	Coordinate welfare support activities in response to an incident	
PMASUP520	Review procedures to minimise environmental impact of process	
PMASUP540	Analyse equipment performance	
PMAWHS502	Contribute to safety case	
PMAWHS511	Manage emergency incidents	

Group C – Other electives

Unit code	**Unit title**	**Prerequisites**
MSL954004	Obtain representative samples in accordance with sampling plan	
MSMENV472	Implement and monitor environmentally sustainable work practices	
MSMOPS400	Optimise process/plant area	
MSMOPS401	Trial new process or product	
MSMPER300	Issue work permits	MSMWHS201
MSMPER400	Coordinate permit process	MSMPER300
MSMSUP390	Use structured problem-solving tools	
MSMSUP400	Develop and monitor quality systems	
MSMSUP404	Coordinate maintenance	
MSMSUP405	Identify problems in fluid power system	
MSMSUP406	Identify faults in electronic control	

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MSMWHS400	Contribute to WHS management system	
MSMWHS401	Assess risk	
MSS403085	Ensure process improvements are sustained	
MSS403011	Facilitate implementation of competitive systems and practices	
MSS405013	Facilitate holistic culture improvement in an organisation	
MSS403086	Improve cost factors in work practices	
MSS403040	Facilitate and improve implementation of 5S	
MSS403054	Facilitate breakthrough improvements	
MSS403087	Mistake proof an operational process	
MSS404084	Undertake process capability improvements	MSS404052
MSS404060	Facilitate the use of planning software systems in a work area or team	
MSS404085	Undertake proactive maintenance analyses	
MSS404086	Assist in implementing a proactive maintenance strategy	
MSS404054	Apply statistics to operational processes	
PMAOMIR407	Audit incident preparedness and established response systems	
PMAOMIR418	Coordinate incident response	
PMAOMIR424	Develop and maintain community relationships	
PMAOMIR430	Conduct and assess incident exercises	
PMAOMIR444	Develop incident containment tactics	
PMAOMIR449	Monitor legal compliance obligations during incidents	
PMAOPS280	Interpret process plant schematics	

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PMAOPS350	Match and adjust colour	
PMAOPS402	Respond to abnormal process situations	MSMSUP390
PMAOPS405	Operate complex control systems	
PMAOPS410	Operate remote production facilities	
PMAOPS411	Manage plant shutdown and restart	
PMAOPS433	Manage wells and gathering systems	
PMAOPS434	Commission wells and gathering systems	
PMAOPS450	Solve colour problems	
PMAOPS460	Monitor and operate tailings management facilities	
PMASUP410	Develop plant documentation	
PMASUP420	Minimise environmental impact of process	
PMASUP432	Coordinate pipeline projects	MSMPER300
PMASUP440	Commission/recommission plant	
PMASUP441	Decommission plant	
PMASUP444	Plan plant preparation and isolation	
PMASUP445	Participate in HAZOP studies	PMAOPS280
PMAWHS420	Develop first aid procedures and manage resources	
TAEASS401	Plan assessment activities and processes	
TAEASS402	Assess competence	
TAEASS403	Participate in assessment validation	

Up to **two (2)** relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are packaged in a Certificate IV or above.

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Qualification Mapping Information

Release 2. Supersedes and is equivalent to PMA50116 Diploma of Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA50108 Diploma of Process Plant Technology.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMA60116 Advanced Diploma of Process Plant Technology

Modification History

Release 2. Elective unit codes and titles updated. Supersedes and is equivalent to PMA60116 Advanced Diploma of Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA60108 Advanced Diploma of Process Plant Technology.

Qualification Description

The PMA60115 Advanced Diploma of Process Plant Technology is a technical qualification for technologists or para-professionals who undertake technical projects such as plant modifications either individually or as part of a project team where they have a significant technical role. They may have worked their way up through the process plant operation/technology certificate and diploma qualifications or may have entered the industry at this level, either from another industry or trade occupation.

Other non-technical Advanced Diplomas are available at this level such as MSS60312 - Advanced Diploma of Competitive Systems and Practices.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

To be awarded the PMA60116 Advanced Diploma of Process Plant Technology competency must be achieved in **fifteen (15)** units of competency:

- **four (4)** core units of competency
- **eleven (11)** elective units of competency, chosen as specified below:
- a minimum of **one (1)** from Group A
- a minimum of **one (1)** from Group B
- the remainder may be chosen from Groups A, B, C and D (with a maximum of **seven (7)** from Group D) to bring the total number of electives to **eleven (11)**.

Note: Three (3) elective units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups C and D.

Note: Where prerequisite units are identified they must be counted in the total number of units

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required for achievement of the qualification.

Core units of competency

Complete all **four (4)** units from the following list.

Unit code	**Unit title**
MSMENV272	Participate in environmentally sustainable work practices
MSMSUP200	Achieve work outcomes
MSMSUP210	Process and record information
MSMWHS200	Work safely

ELECTIVE UNITS

Group A – Technical electives

Unit code	**Unit title**	**Prerequisites**
PMAOPS600	Modify plant	
PMAOPS601	Debottleneck plant	
PMAOPS751	Apply physiochemical knowledge to select raw materials for surface coatings	
PMAOPS752	Develop a decorative coating	
PMAOPS753	Develop a non-decorative coating or ink	
PMAOPS755	Provide surface coatings application advice	
MSMOPS601	Design equipment and system modifications	

Group B – Support electives

Unit code	**Unit title**	**Prerequisites**
MSS405015	Manage relationships with non-customer	

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	external organisations	
MSS405084	Manage people relationships	
MSS405016	Manage workplace learning	
MSS405030	Optimise cost of a product or service	
MSS405031	Undertake value analysis of product or process costs in terms of customer requirements	
MSS405040	Manage 5S system in an organisation	
MSS405041	Implement improvement systems in an organisation	
MSS405054	Determine and improve process capability	MSS404052A
MSS405063	Develop the application of enterprise control systems in an organisation	
MSS405064	Determine and establish information collection requirements and processes	
MSS405088	Plan, implement and monitor energy management	
MSS015022	Develop strategies for more sustainable use of resources	
MSS405081	Develop a proactive maintenance strategy	
MSMENV672	Develop workplace policy and procedures for environmental sustainability	
MSMWHS601	Develop WHS management system	
MSL936003	Maintain quality system and continuous improvement processes within work or functional area	
PMAOMIR622	Build partnerships to improve incident response capacity	
PMAOMIR650	Manage a crisis	
PMASUP620	Manage environmental management system	
PSPMGT003	Manage change	

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PSPMGT004	Manage diversity	

Group C – Other support electives

Unit code	**Unit title**	**Prerequisites**
MSMWHS503	Maintain WHS management system	
MSMWHS510	Manage risk	
PMAOMIR512	Establish incident response preparedness and response systems	
PMAOMIR523	Manage corporate media requirements in a crisis	
PMAOMIR575	Coordinate welfare support activities in response to an incident	
PMAOPS500	Optimise production systems	
PMAOPS501	Provide operational expertise to a project team	
PMAOPS505	Control the process during abnormal situations	
PMAOPS511	Determine energy transfer loads	
PMAOPS512	Determine mass transfer loads	
PMAOPS520	Manage utilities	
PMAOPS521	Plan plant shutdown	
PMAOPS522	Coordinate plant shutdown	
PMAOPS550	Develop a colour formulation	PMAOPS350 PMAOPS450
PMAOPS560	Plan and design tailings management facilities	
PMASUP520	Review procedures to minimise environmental impact of process	
PMASUP540	Analyse equipment performance	
PMAWHS502	Contribute to safety case	

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PMAWHS511	Manage emergency incidents	

Up to **one** (1) relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses where that unit is packaged in a Diploma or above.

Group D – Other electives

Unit code	**Unit title**	**Prerequisites**
MSL954004	Obtain representative samples in accordance with a sampling plan	
MSMENV472	Implement and monitor environmentally sustainable work practices	
MSMOPS400	Optimise process/plant area	
MSMOPS401	Trial new process or product	
MSMPER300	Issue work permits	MSMWHS201
MSMPER400	Coordinate permit process	MSMPER300
MSMSUP390	Use structured problem-solving tools	
MSMSUP400	Develop and monitor quality systems	
MSMSUP404	Coordinate maintenance	
MSMSUP405	Identify problems in fluid power system	
MSMSUP406	Identify faults in electronic control system	
MSMWHS400	Contribute to WHS management system	
MSMWHS401	Assess risk	
MSS403085	Ensure process improvements are sustained	
MSS403011	Facilitate implementation of competitive systems and practices	
MSS405013	Lead team culture improvement	

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MSS403086	Improve cost factors in work practices	
MSS403040	Facilitate and improve implementation of 5S	
MSS403054	Facilitate breakthrough improvements	
MSS403087	Mistake proof an operational process	
MSS404084	Undertake process capability improvements	MSS404052A
MSS404054	Apply statistics to operational processes	
MSS404060	Facilitate the use of planning software systems in a work area or team	
MSS404085	Undertake proactive maintenance analyses	
MSS404086	Assist in implementing a proactive maintenance strategy	
MSS404054	Apply statistics to operational processes	
PMAOMIR407	Audit incident preparedness and established response systems	
PMAOMIR418	Coordinate incident response	
PMAOMIR424	Develop and maintain community relationships	
PMAOMIR430	Conduct and assess incident exercises	
PMAOMIR444	Develop incident containment tactics	
PMAOMIR449	Monitor legal compliance obligations during incidents	
PMAOPS280	Interpret process plant schematics	
PMAOPS350	Match and adjust colour	
PMAOPS402	Respond to abnormal process situations	MSMSUP390
PMAOPS405	Operate complex control systems	
PMAOPS410	Operate remote production facilities	
PMAOPS411	Manage plant shutdown and restart	

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PMAOPS433	Manage wells and gathering systems	
PMAOPS434	Commission wells and gathering systems	
PMAOPS450	Solve colour problems	
PMAOPS460	Monitor and operate tailings management facilities	
PMASUP410	Develop plant documentation	
PMASUP420	Minimise environmental impact of process	
PMASUP432	Coordinate pipeline projects	MSMPER300
PMASUP440	Commission/recommission plant	
PMASUP441	Decommission plant	
PMASUP444	Plan plant preparation and isolation	
PMASUP445	Participate in HAZOP studies	PMAOPS280
PMAWHS420	Develop first aid procedures and manage resources	
TAEASS401	Plan assessment activities and processes	
TAEASS402	Assess competence	
TAEASS403	Participate in assessment validation	
Up to **two (2)** relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are packaged in a Certificate IV or above.		

Qualification Mapping Information

Release 2. Supersedes and is equivalent to PMA60116 Advanced Diploma of Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA60108 Advanced Diploma of Process Plant Technology.

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PMAOMIR306 Operate control panel during an emergency

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOMIR305 Operate panel during an emergency.

Application

This unit describes the skills and knowledge required to operate a control panel during an emergency and apply the relevant technical and plant knowledge to assess, monitor and respond to the emergency and maintain operations. This unit applies after an emergency has been declared or when conditions in the plant or process have escalated to an emergency.

This unit applies to an individual working as part of a team or group, and working in liaison with other shift and emergency response team members, and the incident commander and control-room operator.

The control-room operator will act under the direction of a designated incident commander in a declared emergency incident. While this role may be delegated to another person, responsibility for the correct operation of the control room and its operators remains with the commander.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

This unit is relevant to the *Control of Major Hazard Facilities National Standard [NOHSC:1014 (2002)] and National Code of Practice* [NOHSC:2016(1996)]. Contextualisation must be undertaken in order to ensure compliance with specific state or territory legislation.

Pre-requisite Unit

PMAOPS315 Operate and troubleshoot process control systems.

Competency Field

Incident readiness and response.

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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. Assess a potential emergency according to procedures	1.1 Identify emergency and clarify cause of the alarm 1.2 Prepare for response to emergency 1.3 Escalate to emergency response 1.4 Report the critical situation 1.5 Return to normal operations
2. Respond to emergency according to procedures	2.1 Activate all relevant alarms 2.2 Communicate with relevant personnel to determine status and provide updates 2.3 Check status of all relevant plant systems and take appropriate action 2.4 Maintain a record of critical information 2.5 Shut down plant items
3. Monitor emergency	3.1 Monitor escalation of the emergency 3.2 Monitor critical variables of relevant plant 3.3 Monitor weather and other external conditions 3.4 Clarify and act on information received 3.5 Make changes as requested by incident commander 3.6 Keep parts of the plant that are still online operational 3.7 Communicate with personnel throughout emergency to determine status and provide updates
4. Conclude emergency response	4.1 Sound all clear when instructed 4.2 Confirm which plant systems can be operated 4.3 Bring operational plant back to best-available operating conditions 4.4 Review emergency response according to procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete written documentation.
- Oral communication skills to liaise and coordinate with other shift and emergency-response team members, the incident commander and the control-room operator.
- Numeracy skills to monitor critical variables.
- Technology skills to operate the control panel.

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

Unit Mapping Information

Equivalent to PMAOMIR305 Operate panel during an emergency.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR306 Operate control panel during an emergency

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOMIR305 Operate panel during an emergency.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, and including at least 1 of the following emergencies:
  - loss of control of a process
  - unstable process, feed or utilities.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- types of emergencies that can arise and panel operations appropriate to control emergency situations
- critical variables of plant
- organisational procedures, including:
  - safety, hazards and hazard control
  - incident, fire and accident
  - emergency response
  - communication systems
  - reporting
- how to access and interpret weather and external conditions
- hazards that may arise in an incident and appropriate risk controls
- alarms, causes of alarms and false alarms
- indicators of developing and existing critical situations.

Assessment Conditions

Skills must have been demonstrated in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:

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- distributed control system (DCS); may use a DCS linked to a plant simulator where a suitable simulator is available
- emergency response procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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PMAOMIR322 Manage incident response information

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment requirements changed. Supersedes and is equivalent to PMAOMIR320 Manage incident response information.

Application

This unit describes the skills and knowledge required to manage information during an incident.

This unit applies to emergency response team members who are performing the role of information manager during the incident and are required to identify incident information needs and sources, ensure information systems are in place and being used, and collect, analyse and report on data relating to incidents.

This unit applies to an individual working alone or as part of a team or group, working in liaison with other shift and emergency response team members, the incident commander, control-room operator and/or others involved in the incident.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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. Collect and analyse data during an incident	1.1 Identify incident information needs and sources 1.2 Collect timely and relevant data that is suitable for analysis, interpretation and dissemination 1.3 Maintain an accurate chronological record of events

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Analyse data to provide required information
2. Record and report information during an incident	2.1 Report required information and recommendations to all stakeholders 2.2 Store and retrieve data and information using appropriate formats and technology
3. Review the incident response information and recommend process improvements	3.1 Assess suitability of information collected and presented during the incident 3.2 Identify improvements in pre-existing information required to manage an incident 3.3 Complete organisation post-incident reporting

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to monitor and evaluate process and make recommendations.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete written documentation.
- Oral communication skills to liaise and coordinate with other shift and emergency response team members, the incident commander and the control-room operator.
- Numeracy skills to collect, analyse and interpret data.

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

Unit Mapping Information

Equivalent to PMAOMIR320 Manage incident response information.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR322 Manage incident response information

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment requirements changed. Supersedes and is equivalent to PMAOMIR320 Manage incident response information.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisational procedures, including:
  - incident, fire and accident responses
  - communication systems
  - emergency response plans
  - reporting and information storage
- internal and external stakeholders and their typical incident information needs
- data collection and collation methods and technology
- data analysis and display techniques to interpret and record and report incident data.

Assessment Conditions

Skills must have been demonstrated in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - incident reporting procedures and documentation
  - incident data
  - emergency response plans.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

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PMAOMIR323 Manage communication systems during an incident

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOMIR321 Manage communication systems during an incident.

Application

This unit describes the skills and knowledge required to manage and maintain availability of effective communication systems during an incident, such as telephone equipment, mobile phones, radio systems and email.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment to provide for and maintain communication needs during an incident.

This unit applies to an individual working as part of a team or group, and working in liaison with other shift and emergency response team members, and the incident commander and control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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. Provide communications systems	1.1 Identify stakeholders in the incident management process 1.2 Identify the communication needs of these stakeholders 1.3 Acquire, set up and put into operation the communications systems

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Support personnel to use the communication systems
2. Prepare contingency plans	2.1 Review the incident information available to estimate possible future communication requirements 2.2 Prepare contingency plans for communication requirements, including all equipment, facilities, resources and people 2.3 Implement the contingency plans to ensure that systems are provided 2.4 Review and update the requirements throughout the incident
3. Record the incident	3.1 Maintain a chronological record of the incident, and the needs, resources and solutions required as the incident progresses 3.2 Write a report, including recommendations for the future, at the conclusion of the incident
4. Control communications systems hazards	4.1 Identify hazards in the work environment 4.2 Assess the risks arising from those hazards 4.3 Implement measures to control risks in line with procedures and duty of care
5. Identify and respond to abnormal situations	5.1 Monitor equipment and process to identify actual and developing situations which may require action 5.2 Take action to remedy abnormal situations according to operating procedures 5.3 Complete required documents outlining abnormal situation management and corrective action taken

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to select, plan and organise actions to manage systems.
- Reading skills to follow written procedures and documentation.

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- Writing skills to complete written reports and documentation.
- Oral communication skills to liaise and coordinate with other shift and emergency response team members, the incident commander and the control-room operator.
- Technology skills to use communication equipment and systems.

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

Unit Mapping Information

Equivalent to PMAOMIR321 Manage communication systems during an incident

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR323 Manage communication systems during an incident

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOMIR321 Manage communication systems during an incident.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisational procedures, including:
  - incident, fire and accident responses
  - communication systems
  - emergency response plans
  - skills development and training
  - acquisitions and purchasing
  - reporting requirements
- internal and external stakeholders and their typical incident communication needs
- types of communication equipment and systems and their application
- equipment and process abnormal situations and required action
- contingency planning techniques to address problems and abnormal situations
- communication system hazards:
  - possible causes
  - potential consequences
  - risks
  - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - communication systems

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- emergency response plans
- abnormal situations must be relevant to communication systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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PMAOPS306 Operate and troubleshoot production unit

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS300 Operate a production unit.

Application

This unit describes the skills and knowledge required to operate an enterprise-specific unit of a production plant, which is not otherwise described by units in this Training Package. The production unit operation will integrate several plant items (single unit operations).

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate production unit according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on production unit and address outstanding and incomplete work

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking appropriate action on unexpected readings 1.7 Adjust production unit process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor production unit process system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare production unit for maintenance	3.1 Prepare production unit process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down production unit process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate production unit process system from energy sources
4. Prepare and start up production unit	4.1 De-isolate and prepare production unit process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up production unit process system according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Equivalent to PMAOPS300 Operate a production unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS306 Operate and troubleshoot production unit

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS300 Operate a production unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the production unit, including:
  - principles of operation of plant and equipment
  - type of production unit, the component plant items and their functions
  - operating parameters and integrity limits including temperature, pressure, flow, pH and amps
  - impact of external factors, including variations in weather and feed
  - methods of changing rate, grade, specification and feed, and the advantages and disadvantages of each
  - procedures for starting, stopping, operating, controlling and isolating unit
  - emergency shutdown procedures
  - required preparation and permits for different types of work to be done on production unit and its component items
  - interactions with processes
- physics and chemistry to the level of being able to provide an overview of the science of the production unit process
- product specifications and tolerances and effects of variations in process conditions and materials
- production unit abnormal situations and required actions, including but not limited to:
  - unstable and suboptimal operation
  - critical variables and outputs
  - variations in feed rates
  - variations in quality
  - unstable process variables

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  - loss of utilities
  - process plant trips
  - emergency situations
- production hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - production unit process system
  - operating procedures
- abnormal situations must be relevant to the production unit.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS310 Operate and troubleshoot distillation system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS301 Operate a distillation unit.

Application

This unit describes the skills and knowledge required to operate a distillation system. This may involve one or more distillation columns and their associated equipment, and piping and controls operated together to separate two or more components to produce a product to specification.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the operation of equipment in a plant from a central control room.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate distillation system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on distillation system and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking appropriate action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor distillation system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare distillation system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up distillation system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS301 Operate a distillation unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS310 Operate and troubleshoot distillation system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS301 Operate a distillation unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- distillation principles, including stripping and rectification
- all items on a schematic of the distillation system, including:
  - type of distillation unit, the component plant items and their functions, including column, tray/packing, condenser and reboiler operations
  - interactions between plant items and processes
  - operating parameters and integrity limits, including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating the system
  - methods of changing production rate, product specifications and process variables
  - impact of external factors (including variations in weather)
- physics and chemistry to the level of being able to provide an overview of the science of the distillation process
- distillation system abnormal situations and required actions, including but not limited to:
  - process-feed variations
  - instrument failure/wrong reading
  - electrical failure
  - mechanical failure
  - operational problem
  - flooding
  - channelling (packed column)
  - dumping
  - entrainment
  - loss of control of critical variables and outputs

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  - variations in feed rates
  - variations in quality
- hierarchy of control
- distillation hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - distillation system
  - operating procedures
- abnormal situations must be relevant to distillation systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS311 Operate and troubleshoot reactors and reaction equipment

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS302 Operate reactors and reaction equipment.

Application

This unit describes the skills and knowledge required to operate a reactor unit that, as its prime function, causes and controls a chemical reaction. The reactor unit operation will integrate several plant items (single-unit operations). Operation of the reactor unit includes the operation of component plant items that are integral to the overall operation of the production unit.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate reactor unit according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on reactor and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking appropriate action on unexpected readings 1.7 Adjust process system according to its type and function/s to maximise performance
2. Identify and respond to abnormal situations during operation	2.1 Monitor reactor unit frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare reactor unit for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations which may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up reactor unit	4.1 De-isolate and prepare process system to be returned to standby or service

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations which may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Writing skills to complete workplace documentation.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS302 Operate reactors and reaction equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS311 Operate and troubleshoot reactors and reaction equipment

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS302 Operate reactors and reaction equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the reactor unit, including:
  - type of reactor, the component plant items and their functions
  - troubleshooting of major components
  - principles of operation of plant and equipment
  - operating parameters and integrity limits including temperature, pressure, flow and pH
  - procedures for starting, stopping, operating, controlling and isolating the reactor
  - basis of the process used in the reactor to cause chemical reaction
  - methods of controlling the reaction rate and yield, and the advantages and disadvantages of each
  - impact of external factors (including variations in weather and feed)
  - interactions between plant items and processes
- physics and chemistry to the level of being able to provide an overview of the science of the reactor process
- the nature and condition of materials at each stage of the reaction, the changes which have occurred in that stage and why they have occurred
- the reaction in chemical terms and equations, including the effect of changing reaction variables (including temperature, pressure, catalyst, concentration and pH)
- product specifications and tolerances
- reactor and reaction equipment abnormal situations and required actions, including but not limited to:
  - variations in catalyst activity
  - control of exotherm/endotherm
  - adjustments to meet product specifications

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  - variations in feed rates and quality
  - raw materials variations
  - instrument failure and wrong reading
  - equipment failure (electrical and mechanical)
  - mechanical failure
  - operational problems
- hierarchy of control
- reactor hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - reactors and reaction equipment
  - operating procedures
- abnormal situations must be relevant to reactors and reaction equipment.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS313 Operate and troubleshoot furnaces to induce reaction

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS303 Operate furnaces to induce reaction.

Application

This unit describes the skills and knowledge required to operate a furnace for the primary purpose of causing, inducing or facilitating a chemical reaction such as cracking, smelting or other very high temperature processes. The furnace will typically be directly fired or may use the feed as the fuel.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. It includes operation of component plant items.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate furnace system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Identify, control and report hazards 1.4 Check for recent work undertaken on furnace system and address outstanding and incomplete work 1.5 Check operational status of furnace system 1.6 Perform routine checks and complete logs and paperwork, taking appropriate action on unexpected readings 1.7 Adjust furnace system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor furnace system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare furnace system for maintenance	3.1 Prepare furnace system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down furnace system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate furnace system from energy sources
4. Prepare and start up furnace system	4.1 De-isolate and prepare furnace system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Start up furnace system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations which may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS303 Operate furnaces to induce reaction.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS313 Operate and troubleshoot furnaces to induce reaction

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS303 Operate furnaces to induce reaction.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the furnace system, including:
  - type of furnace, the component plant items and their functions
  - principles of operation of plant and equipment, including combustion principles, draft, burner design, excess air/flue CO/CO_2, and flame patterns/ impingement
  - methods of changing production rate and process variables
  - impact of external factors (including variations in weather)
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow and pH
  - procedures for starting, stopping, operating, controlling and isolating system
- physics and chemistry to the level of being able to provide an overview of the science of the furnace system process
- furnace system abnormal situations and required actions, including but not limited to:
  - soot blowing
  - control of draft, fuel and air
  - variations in catalyst activity (where appropriate)
  - control of temperature and cracking/product rate/quality
  - variations in feed rates
  - variations in quality
- hierarchy of control
- furnace system hazards:
  - possible causes
  - potential consequences

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- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
- furnace system
- operating procedures
- abnormal situations must be relevant to furnace systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS314 Operate and troubleshoot compressor systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS304 Operate and monitor compressor systems and equipment.

Application

This unit describes the skills and knowledge required to operate a complex compressor system. The compressor system will integrate several plant items (single unit operations).

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate compressor system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on compressor system and

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor compressor system and its component plant items frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare compressor system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
5. Prepare and start up compressor system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up compressor process system according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS304 Operate and monitor compressor systems and equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS314 Operate and troubleshoot compressor systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS304 Operate and monitor compressor systems and equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the compressor system, including:
  - type of compressor, the component plant items and their functions
  - principles of operation of plant and equipment
  - functions of major components and troubleshooting techniques
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating the system
  - methods of changing flow rate and specifications, and the advantages and disadvantages of each
  - impact of external factors (including variations in weather)
  - emergency shutdown procedures
- physics to the level of being able to provide an overview of the science of the compressor process
- compressor system abnormal situations and required action, including but not limited to:
  - process gas variations
  - instrument failure and wrong reading
  - electrical failure
  - mechanical failure
  - operational problem
  - surging
  - control of temperature and pressure
  - variations in feed

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    - vibration
- hierarchy of control
- compressor system hazards:
- possible causes
- potential consequences
- appropriate risk controls
    - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
- compressor system
- operating procedures
- abnormal situations must be relevant to compressor systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS315 Operate and troubleshoot process control systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS305 Operate process control systems.

Application

This unit describes the skills and knowledge required to operate a centralised control panel, such as distributed control system (DCS) type controls, to control and monitor multiple vessels, plant items and/or products. It is typically located on-site but off-plant in a control room, but may also be off-site. It may use a range of control algorithms and multiple control loops and include other local controllers that are integral to its operation.

This unit applies to autonomous operators who have overall responsibility for the operation of all units of equipment covered by the control system/portion of the control system they operate. They would take a leading role in liaising and cooperating with other members of the team, including ‘outside operators’. However, this unit does not preclude the situation where the panel operator may also undertake 'outside' functions.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate process control system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on plant units being controlled and address outstanding and incomplete work 1.5 Check operational status of process control system
2. Use operator interface	2.1 Use human interface devices (HIDs) to access control system 2.2 Monitor the process using the operator interfaces 2.3 Select controller modes 2.4 Acknowledge messages and alarms
3. Access control information	3.1 Obtain current and historical data and information from the control system by applying systems knowledge 3.2 Identify the status of individual pieces of equipment from the control panel and use information to identify potential faults 3.3 Minimise fluctuations and variations in process through the interpretation of existing trends and control schematics 3.4 Record process variations and irregularities to procedures
4. Control process variations and monitor operations	4.1 Use historical data to assist in the identification of abnormal situations 4.2 Process available information to identify potential faults 4.3 Undertake required set point and output changes to meet plant and process requirements 4.4 Optimise plant operating conditions in accordance with guidelines 4.5 Adjust production in response to test results and control panel information 4.6 Monitor key process and environmental variables and take action 4.7 Adjust controller settings in accordance with procedures 4.8 Use fine-tuning software according to operating procedures 4.9 Coordinate with upstream and downstream units 4.10 Record adjustments and variations to specifications and schedules
5. Identify and respond to abnormal situations during operation	5.1 Monitor process control system frequently and critically throughout shift using own senses, and measured and indicated data 5.2 Monitor field data and instrumentation to ensure that product remains on specification

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	5.3 Identify impacts of changes upstream and downstream 5.4 Identify actual and developing situations that may require action 5.5 Take action to remedy abnormal situations according to operating procedures 5.6 Complete required documents outlining abnormal situation management and corrective action taken
6. Shut down and prepare process control system for maintenance	6.1 Prepare process control system to be shut down according to operating procedures 6.2 Complete pre-shutdown checks according to operating procedures 6.3 Shut down process control system according to operating procedures 6.4 Identify, control and report shutdown hazards 6.5 Monitor shutdown and identify abnormal situations that may require action 6.6 Take action to remedy abnormal situations according to operating procedures 6.7 Shut down and changeover duty and standby equipment according to operating procedures 6.8 Isolate process control system from energy sources
7. Prepare and start up process control system	7.1 De-isolate and prepare process control system to be returned to standby or service 7.2 Complete pre-start checks according to operating procedures 7.3 Start up process control system according to operating procedures 7.4 Identify, control and report startup hazards 7.5 Monitor startup and identify abnormal situations that may require action 7.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and outside operators.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Technology skills to operate control panel, interfaces and software.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS305 Operate process control systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS315 Operate and troubleshoot process control systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS305 Operate process control systems.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- process control systems, including:
  - the function and location of the equipment
  - operating parameters and integrity limits
  - impact of external factors, including variations in weather and feed
  - emergency shutdown procedures
  - control system architecture
  - basis of control for the plant/s
  - types of instrumentation and control systems, including feedforward, feedback and open control
  - types of instrumentation and control system components and their role, including primary sensing devices, final control elements and transducers and transmitters
  - how control loops and their components, including proportional integral derivative (PID) control, set points, controlled variable and indicated variable, operate to control the process, and their limitations
  - interaction between multiple control loops, including cascade control
  - impacts of changing controller settings and the limits within which changes can be made
  - uninterruptable power supplies (UPS) and its applications and use
- organisational processes and procedures, including:
  - interactions between plant items and processes
  - specific plant process operations
  - process drawings, such as piping and instrumentation diagram (P&ID) and process flow diagrams (PFD)

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    - process control philosophies and strategies
- physics and chemistry to the level of being able to provide an overview of the science of the process control system
- basic science of upstream and downstream processes
- principles of cause and effect
- product specifications and tolerances
- process control system abnormal situations and required action including but not limited to:
    - instrument failure and malfunction
    - electrical failure and malfunction
    - mechanical failure and malfunction
    - equipment design deficiencies
    - product parameters (temperature, flows, pressure and levels)
    - process control system malfunction
    - power and utility failures
    - variation in feed rate; quality or loss of feed
    - unstable control of pressure, temperature, level and/or flows
    - unstable and suboptimal operation
    - control equipment failure
    - process plant trips
    - change in atmospheric conditions (rain, temperature, wind and lightning)
    - emergency situations
- process control system hazards:
    - possible causes
    - potential consequences
    - appropriate risk controls
    - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
    - plant, process control system, interface
    - operating procedures
- abnormal situations must be relevant to process control systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS316 Organise storage and logistics of general materials

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS308 Organise storage and logistics of general materials.

Application

This unit describes the skills and knowledge required to organise the storage, retrieval and logistics of general materials for the plant or work area. This includes all types of storage, such as racks and racking systems; marked floor spaces pallets, collapsible bins and portable tanks; and specialised storage areas.

This unit applies to operations technicians who are required to demonstrate a significant understanding of the process, materials and equipment used to determine requirements, control hazards and respond to abnormal situations.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Categorise materials	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards 1.4 Locate storage and handling information for the materials, including

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	hazardous and dangerous goods information, using labels, inventory system/s or other sources of information 1.5 Interpret storage, handling and hazards information from information sources 1.6 Categorise materials in terms of frequency of use (pick), handling requirements, sources and destination points (internal and external), security requirements, product life and location in the storage area
2. Select storage location and method	2.1 Determine storage location for materials based on hazardous or dangerous goods status, composition, state of the materials and containers, temperature and/or light control, fragility, quantity, size or shape 2.2 Determine storage requirements for new materials based on information available and recommend requirements 2.3 Advise others on the storage and handling of materials based on the information available
3. Store and retrieve materials	3.1 Determine transport and handling requirements for materials 3.2 Move materials to and from storage areas, using appropriate handling methods 3.3 Update relevant stock records and documentation 3.4 Advise relevant personnel of material stock status 3.5 Contribute to the logistics management process by supplying accurate stock information and movement, and advice on storage requirements and capacity
4. Identify and respond to abnormal situations	4.1 Monitor equipment and materials frequently and critically throughout shift using own senses, and measured and indicated data 4.2 Identify actual and developing situations that may require action 4.3 Take action to remedy abnormal situations according to operating procedures 4.4 Complete required documents outlining abnormal situation management and corrective action taken

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to monitor stock and processes and select appropriate storage methods, locations and actions.
- Reading skills to follow written procedures, labels and documentation.
- Writing skills to complete written reports, stock records and documentation.
- Oral communication to liaise with and advise team members.
- Numeracy skills to check, analyse and interpret stock levels.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS308 Organise storage and logistics of general materials.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS316 Organise storage and logistics of general materials

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS308 Organise storage and logistics of general materials.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- storage locations, methods and categories
- materials, including handling, labelling and storage requirements
- organisation procedures, including:
  - inventory and stock control
  - safety, manual handling, emergency and hazard control
  - duty-of-care obligations
- abnormal situations, causes and required action, including:
  - labelling problems (missing, damaged and illegible)
  - congestion and lack of appropriate storage area
  - damaged and inappropriate packaging
  - missing, incorrect and incomplete paperwork and records
- hierarchy of control
- storage and logistics hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:

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  - industrial style storage facilities and equipment
  - operating procedures
- abnormal situations must be relevant to general materials.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS317 Undertake ship transfer operations

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS312 Undertake ship loading/unloading operations.

Application

This unit describes the skills and knowledge required to undertake ship loading and/or unloading operations for products such as liquefied natural gas (LNG), liquefied petroleum gas (LPG), oil, chemicals and particulates. It applies to loading areas including:

- terminal facilities
- jetties
- production platforms
- floating storage and offtake (FSO)/floating production storage and offtake (FPSO).

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in order to prepare for and control the cargo transfer rate within safe limits.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate ship transfer system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards 1.4 Check for recent work undertaken on ship loading and/or unloading equipment and address outstanding and incomplete work 1.5 Check operational status of transfer equipment 1.6 Check that the vessel is moored and secured in accordance with procedures and that the transfer points are aligned, ready for product transfer 1.7 Activate and bring all safety systems online 1.8 Check all arms, hoses and equipment connections are in place and operational conditions for transfer of product are satisfied 1.9 Complete safety-check documentation
2. Transfer product to and/or from ship according to procedures	2.1 Check transfer advice and documentation and complete required records 2.2 Engage fire and deluge protection systems 2.3 Launch and retrieve batching pigs 2.4 Commence the transfer process of the specified product
3. Identify and respond to abnormal situations during operation	3.1 Monitor transfer system frequently and critically throughout transfer using own senses, and measured and indicated data 3.2 Monitor field data and instrumentation to ensure that product remains on specification 3.3 Identify impacts of changes upstream and downstream 3.4 Identify actual and developing situations that may require action 3.5 Take action to remedy abnormal situations according to operating procedures 3.6 Complete required documents outlining abnormal situation management and corrective action taken
4. Complete transfer process	4.1 Complete transfer requirements within the allowable timeframes and schedules 4.2 Retrieve batching pigs, as required

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Shut down, isolate and disengage transfer systems from or to the vessel 4.4 Continue to monitor and control fire, deluge and safety systems during the finalisation of the loading process and let-go of the vessel 4.5 Complete logs and documentation and communicate the results of the transfer to personnel
5. Shut down and prepare transfer system for maintenance	5.1 Prepare transfer system to be shut down according to operating procedures 5.2 Complete pre-shutdown checks according to operating procedures 5.3 Shut down transfer system according to operating procedures 5.4 Identify, control and report shutdown hazards 5.5 Monitor shutdown and identify abnormal situations that may require action 5.6 Take action to remedy abnormal situations according to operating procedures 5.7 Shut down and changeover duty and standby equipment according to operating procedures 5.8 Isolate transfer system from energy sources
6. Prepare and start up transfer system	6.1 De-isolate and prepare transfer system to be returned to standby or service 6.2 Complete pre-start checks according to operating procedures 6.3 Start up transfer system according to operating procedures 6.4 Identify, control and report startup hazards 6.5 Monitor startup and identify abnormal situations that may require action 6.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS312 Undertake ship loading/unloading operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS317 Undertake ship transfer operations

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS312 Undertake ship loading/unloading operations.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context which must include one of the following abnormal situations where emergency procedures are applied:
  - a vapour leakage
  - a product leakage
  - a product spill.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the ship loading and/or unloading system, including:
  - principles of operation of plant and equipment
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow,
  - methods of controlling the rate of transfer and the advantages and disadvantages of each
  - procedures for starting, stopping, operating, controlling and isolating the system
  - emergency shutdown procedures
  - interactions between plant items and processes
  - functions of major components and troubleshooting techniques
- impact of external factors including variations in weather
- storage and product transfer techniques and mediums
- the nature and condition of materials being transferred to and from the vessel and the factors to be considered in the transfer operation
- effects of temperature and pressure in transfer operations
- ship loading and/or unloading abnormal situations and required actions
- hierarchy of control
- ship loading and/or unloading hazards:
  - possible causes

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- potential consequences
- appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - ship loading and/or unloading equipment
  - product being transferred
  - vessel
  - operating procedures
- abnormal situations must be relevant to ship transfer operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS318 Conduct artificial lift

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS320 Conduct artificial lift.

Application

This unit describes the skills and knowledge required to control the artificial lift of fluids from operating wells either onshore or offshore using pumps, valves and compressors. Fluids may be oil, condensate, gas or water.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate lifting and production equipment to produce product according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Identify, control and report hazards 1.4 Check for recent work undertaken on artificial lift equipment and address outstanding and incomplete work 1.5 Check operational status of artificial lift equipment 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust artificial lift equipment according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor artificial lift equipment frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare artificial lift equipment for maintenance	3.1 Prepare artificial lift equipment to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down artificial lift equipment according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate artificial lift equipment from energy sources
4. Prepare and start up artificial lift equipment	4.1 De-isolate and prepare artificial lift equipment to be returned to standby or service

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.2 Complete pre-start checks according to operating procedures 4.3 Start up artificial lift equipment according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS320 Conduct artificial lift.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS318 Conduct artificial lift

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS320 Conduct artificial lift.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the production unit, including:
  - principles of operation of plant and equipment, including well bore hydraulics, reservoir formation, pumping/compressor efficiencies, production volumes and product capacities
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating artificial lift equipment
  - emergency shutdown procedures
  - function of major components and troubleshooting techniques
- physics and chemistry to the level of being able to provide an overview of the science of the artificial lift process
- local lease and well operations requirements and constraints
- basis of the process used in the well operation
- impact of external factors, including variations in weather and feed
- abnormal situations and required actions, including but not limited to:
  - lift gas variations
  - instrument failure and wrong reading
  - electrical failure
  - mechanical failure
  - operational problem
- hierarchy of control
- artificial lift hazards:

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- possible causes
- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - industrial-type wellhead and artificial lift
  - operating procedures
- abnormal situations must be relevant to the artificial lift process.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS322 Undertake well management

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS321 Undertake well management.

Application

This unit describes the skills and knowledge required to operate and manage a well at:

- onshore and offshore production facilities
- oil or gas production sites.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate well system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on well and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks, and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor well system frequently and critically throughout shift using own senses and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare well system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations which may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
4. Prepare and start up well system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members, the control-room operator, contractors and other service providers.
- Numeracy skills to conduct flow measurements, monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS321 Undertake well management.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS322 Undertake well management

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS321 Undertake well management.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of:
  - operation of plant and equipment
  - well design and construction
  - pumping
  - gas flow
  - gas and water separation
  - equalisation
  - fluid dynamics and statics
- all items on a schematic of the well system, including:
  - types of wells
  - interactions between plant items and processes
  - operating parameters and integrity limits; product specifications and tolerances; flange, pressure and temperature ratings; product temperature, pressure and flow
  - impact of external factors, including variations in weather and feed
  - procedures for starting, stopping, operating, controlling and isolating system
  - emergency shutdown procedures
  - functions of major components and troubleshooting techniques
  - well operations requirements, arrangements and constraints
- well services handover and intervention procedures
- reservoir management, hydraulics, hydrates, hydrate inhibition, subsea as appropriate
- natural gas and oil characteristics

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- physics and chemistry to the level of being able to provide an overview of the science of the well management process, including static electricity principles, corrosion control and chemical handling, environmental aspects and conditions, and hydrate formation
- basis of the process used in the well operation
- mathematical formulae and formats to calculate product volumes
- well system abnormal situations and required action, including but not limited to:
  - leakage
  - vibration
  - loss of control of pressure and/or flow
  - hydrates/blockages
  - liquid slugging
  - corrosion
  - scale formation
  - erosion
- hierarchy of control
- well management hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - well system
  - operating procedures
- abnormal situations must be relevant to well systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS328 Operate and troubleshoot heating furnace

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS323 Operate and monitor heating furnace.

Application

This unit describes the skills and knowledge required to operate a fired heating furnace for heating heat-transfer fluids, which may include natural and synthetic oils or other media, and other industrial uses as required in the workplace.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate heating furnace according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on heating furnace and address outstanding and incomplete work 1.5 Check operational status of heating furnace 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust heating furnace according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor heating furnace frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare heating furnace for maintenance	3.1 Prepare heating furnace to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down heating furnace according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations which may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate heating furnace from energy sources
4. Prepare and start up heating furnace	4.1 De-isolate and prepare heating furnace to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up heating furnace according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.4 Identify, control and report start-up hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS323 Operate and monitor heating furnace.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS328 Operate and troubleshoot heating furnace

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS323 Operate and monitor heating furnace.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, including:
  - shutting down in an emergency.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the production unit, including:
  - principles of operation of plant and equipment
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - operational shutdown processes and procedures, including cooling down, furnace pressure/vacuum and fuel/heat source isolation
  - the processes and procedures for starting a furnace, including heat input, warm-up of the reticulation system, systems operation, reticulation line pressure, heating fluid usage and supply, and component plant items
  - shutdown processes and procedures for internal inspection, including confirming furnace cooling down, vacuum/pressure, fuel/heat source isolation, and removal of combustion equipment and water from furnace
  - procedures for monitoring a furnace, including heating fluid reticulation line pressure/temperature, usage, supply and quality of heating fluid, combustion/heat source system, fuel system, combustion air supply, operation of control/safety devices, combustion management system, and component plant items
  - function, purpose and location of component plant items and troubleshooting techniques
  - emergency shutdown procedures
  - various modes of furnace storage and advantages and disadvantages of each
  - types and purpose of furnace fittings

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- physics and chemistry to the level of being able to provide an overview of the science of the furnace process, including heating fluid properties
- furnace abnormal situations and required actions, including but not limited to:
  - fuel variations (rate and quality)
  - changes to heating requirements
  - coke, soot and scale build-up
  - flame pattern
  - weather conditions
- hierarchy of control
- furnace hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - heating furnace
  - operating procedures
- abnormal situations must be relevant to heating furnace operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS331 Operate and troubleshoot gas turbine system

Modification History

Release 1. Unit code changed and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS324 Operate a gas turbine.

Application

This unit describes the skills and knowledge required to operate a complex, independent gas turbine system in a power generation, compression or similar operation. Typically, it will have a specialised startup and shutdown procedure. It may have its own control panel and inbuilt vibration monitoring equipment.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate.

Some jurisdictions may require the holder of this unit to be licensed or certified; learners should check with the relevant authorities. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate gas turbine system according to procedure	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on gas turbine and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor gas turbine system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare gas turbine system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start gas turbine system	4.1 De-isolate and prepare process system to be returned to standby or service

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS324 Operate a gas turbine.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS331 Operate and troubleshoot gas turbine system

Modification History

Release 1. Unit code changed and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS324 Operate a gas turbine.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the gas turbine system, including:
  - turbine operating principles including fuel injection, lubrication, cooling, ignition, induction and exhaust power supply
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating system
  - emergency shutdown procedures
  - functions of major components and troubleshooting techniques
- physics and chemistry to the level of being able to provide an overview of the science of the gas turbine process and product
- basic science of upstream and downstream processes
- gas turbine system abnormal situations and required actions, including but not limited to:
  - variation in power or fuel supply
  - vibration
  - overheating
  - fouling of turbine/engine/exchangers
  - lubrication quality
  - ancillary equipment failures
- hierarchy of control
- gas turbine hazards:
  - possible causes
  - potential consequences

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- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - gas turbine system
  - operating procedures
- abnormal situations must be relevant to gas turbine systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS332 Generate electrical power

Modification History

Release 1. Unit code and changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS325 Generate electrical power.

Application

This unit describes the skills and knowledge required to operate a power generation system. This unit is expected to apply in offshore, remote or other situations where the site/plant generates electrical power.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate power generation system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on power generation system and address outstanding and incomplete work 1.5 Check operational status of equipment 1.6 Communicate startup of power generation to personnel 1.7 Select prime mover to be used 1.8 Select system for generation process appropriate to voltage systems and requirements 1.9 Conduct pre-start checks 1.10 Start prime mover for the generation system 1.11 Synchronise all equipment to transfer power safely into the system
2. Monitor power generation equipment according to procedures	2.1 Balance loads and power factors 2.2 Monitor and adjust loads to ensure that all machine loads are maintained within safe working conditions 2.3 Distribute energy to the generation system in a safe and efficient manner, ensuring that the status of all equipment is monitored 2.4 Rebalance loads to maximise production efficiency
3. Identify and respond to abnormal situations during operation	3.1 Monitor generation system frequently and critically throughout shift using own senses, and measured and indicated data 3.2 Monitor field data and instrumentation to ensure that product remains on specification 3.3 Identify impacts of changes upstream and downstream 3.4 Identify actual and developing situations that may require action 3.5 Take action to remedy abnormal situations according to operating procedures 3.6 Complete required documents outlining abnormal situation management and corrective action taken
4. Shut down and prepare power generation system for maintenance	4.1 Prepare power generation system to be shut down according to operating procedures 4.2 Complete pre-shutdown checks according to operating procedures 4.3 Shut down power generation system according to operating procedures 4.4 Identify, control and report shutdown hazards

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.5 Monitor shutdown and identify abnormal situations which may require action 4.6 Take action to remedy abnormal situations according to operating procedures 4.7 Shut down and changeover duty and standby equipment according to operating procedures 4.8 Isolate power generation system from energy sources
5. Prepare and start up power generation system	5.1 De-isolate and prepare power generation system to be returned to standby or service 5.2 Complete pre-start checks according to operating procedures 5.3 Startup power generation system according to operating procedures 5.4 Identify, control and report start-up hazards 5.5 Monitor startup and identify abnormal situations that may require action 5.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS325 Generate electrical power.

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Assessment Requirements for PMAOPS332 Generate electrical power

Modification History

Release 1. Unit code and changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS325 Generate electrical power.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, for an offshore, remote or other facility that generates electrical power.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the production unit, including:
  - principles of operation of plant and equipment, including cathodic protection techniques, switching techniques, earthing techniques, voltage systems, electrical generation and distribution theory, and theory of synchronisation
  - interactions between plant item and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature
  - impact of external factors (including variations in weather and feed)
  - procedures for starting, stopping, operating, controlling and isolating the plant
  - emergency shutdown procedures
  - functions of major components and troubleshooting techniques
- physics to the level of being able to provide an overview of the science of the electrical power generation process
- electrical power generation abnormal situations and required actions, including:
  - variation or loss of fuel
  - variation or loss of energy supply
  - control equipment failure
  - power demand changes
  - change in atmospheric condition (rain, temperature, wind, lightning)
  - emergency situations
- hierarchy of control
- hazards associated with chemical substances, including polychlorinated biphenyl (PCBs)

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- electrical generation hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - power generation plant
  - operating procedures
- abnormal situations must be relevant to a power generation system.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS334 Operate and troubleshoot gas absorption system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS326 Operate gas absorption unit.

Application

This unit describes the skills and knowledge required to operate a gas absorption system comprising two or more components of plant or equipment operated together to produce product. Gas absorption units may be glycol dehydration, CO_2 absorption or similar fluid/fluid absorption units.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures. The unit does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate gas absorption system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on gas absorption system and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system, including regeneration, according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor gas absorber system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare gas absorption system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
4. Prepare and start up gas absorption system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS326 Operate gas absorption unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS334 Operate and troubleshoot gas absorption system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS326 Operate gas absorption unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context and included regeneration of the absorbent.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the gas absorption system, including:
  - gas absorber system items, functions and troubleshooting techniques
  - principles of operation, gas treatment and extraction
  - operating parameters and integrity limits, product specifications and tolerances including temperature, pressure, flow and pH
  - procedures for starting, stopping, operating, controlling and isolating system
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions with processes
- physics and chemistry to the level of being able to provide an overview of the science of the gas absorption process
- gas absorption system abnormal situations and required action, including but not limited to:
  - variation or loss of feed
  - unstable control of pressure, temperature level and flows
  - control equipment failure
  - process plant trips
  - change in atmospheric conditions (rain, temperature, wind and lightning)
  - medium contamination (acidic – pH, solids, water content and hydrocarbon content)
  - poor regeneration (flow/heat/cooling)
  - poor quality from test results
  - analyser inaccuracy or malfunction

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- hierarchy of control
- gas absorption and regeneration hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - gas absorption system
  - operating procedures
- abnormal situations must be relevant to gas absorption system.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS336 Operate and troubleshoot fixed-bed adsorption system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS327 Operate fixed bed adsorption unit.

Application

This unit describes the skills and knowledge required to operate a fixed-bed adsorption system that includes a dehydration unit to produce a product. Fixed-bed dehydration units may be molecular sieves or other packed-bed adsorption units.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate fixed-bed adsorption unit	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
according to procedures	requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on adsorption system and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor adsorption system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare fixed-bed adsorption system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up fixed--bed adsorption system	4.1 De-isolate and prepare process system to be returned to standby or service

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS327 Operate fixed bed adsorption unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS336 Operate and troubleshoot fixed-bed adsorption system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS327 Operate fixed bed adsorption unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the fixed-bed adsorption system, including:
  - type of adsorber, the component plant items and their functions
  - principles of operation of dehydrator, gas treatment and extraction, including hydrate formation, adsorption and desorption
  - operating parameters and integrity limits, product specifications and tolerances including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating the system
  - emergency shutdown procedures
  - function of major components and troubleshooting techniques
  - process control philosophies and strategies
  - interactions between plant items and processes
- physics and chemistry to the level of being able to provide an overview of the science of the fixed-bed adsorption process
- adsorption abnormal situations and required action, including but not limited to:
  - variation and loss of feed
  - unstable control of pressure, temperature level and flows
  - control equipment failure
  - process plant trips
  - change in atmospheric conditions (rain, temperature, wind, lightning)
  - emergency situations
  - desiccant contamination
  - desiccant damage and bed collapse (over pressuring)
  - poor regeneration (flow, heat, cooling)

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  - problem with major component
- hierarchy of control
- adsorber system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - fixed-bed adsorption system
  - operating procedures
- abnormal situations must be relevant to fixed-bed adsorption systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS337 Operate and troubleshoot liquid extraction system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS329 Operate liquid extraction unit.

Application

This unit describes the skills and knowledge required to operate a liquid extraction system.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate liquid extraction system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on liquid extraction system and

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks, and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor liquid extraction system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare liquid extraction system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up liquid extraction system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS329 Operate liquid extraction unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS337 Operate and troubleshoot liquid extraction system

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS329 Operate liquid extraction unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the system, including:
  - type of liquid extraction system, the component plant items and their functions
  - principles of operation of liquid extractors, stabilisation principles, the basis of cryogenic operations
  - operating parameters and integrity limits, product specifications and tolerances including temperature, pressure and flow
  - process control philosophies and strategies
  - procedure for starting, stopping, operating, controlling and isolating the system
  - emergency shutdown procedures
  - functions of major components and troubleshooting techniques
- physics and chemistry to the level of being able to provide an overview of the science of the liquid extraction process
- liquid extraction system abnormal situations and required action, including but not limited to:
  - design temperature constraints
  - CO_2 freezing
  - flooding
  - variation in feed quality/rate
- hierarchy of control
- liquid extraction hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls

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- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - liquid extraction system
  - operating procedures
- abnormal situations must be relevant to liquid extraction systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS338 Communicate and monitor pipeline activities

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS330 Communicate and monitor pipeline activities.

Application

This unit describes the skills and knowledge required to gather and relay information about pipeline activities from the pipeline control centre. This unit includes all such items of equipment and operations that form part of the pipeline control system.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of pipeline operations in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. They may also be communicating with customers.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

This unit reflects relevant aspects of the *Australian Standard AS 2885.3—2012 Pipelines—Gas and liquid petroleum Part 3: Operation and maintenance*.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Gather information about pipeline operation	1.1 Respond to and record messages and information received from field operations and pipeline system stations

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
needs	1.2 Interpret and acknowledge alarm codes to ensure the correct response strategy is selected and applied to the situation 1.3 Clarify additional information needs and select an appropriate communication medium to deliver required information 1.4 Improve operational efficiency through adequate and timely application of information provided 1.5 Interpret and action gas forecasts from customers and shippers to ensure correct gas flow rates into the pipeline system are achieved
2. Communicate pipeline information	2.1 Monitor activities of pipeline personnel in the field and data from the control centre 2.2 Evaluate internal messages and response communications concerning system alarms and incidents to establish the scope and severity of the alarms and incidents 2.3 Convey pipeline system operation information to relevant personnel in other work areas to ensure safe and efficient operation of the pipeline system 2.4 Relay information to technicians and other services and stakeholders so that fault-finding or safety checks can be conducted to identify risks to product supply, pipeline equipment, environment and personnel 2.5 Authorise, record and monitor work permits to allow operational activities to be undertaken or cancelled
3. Coordinate pipeline systems operations	3.1 Monitor field and pipeline station operations data 3.2 Monitor and observe equipment operating conditions, pressures and temperatures, and maintain correct equipment operating parameters 3.3 Identify faults and initiate required repair or reporting of the fault 3.4 Isolate identified faults in the pipeline 3.5 Respond to system alarms and emergencies 3.6 Determine the required course of action or emergency response to the identified system condition or emergency 3.7 Complete and document pre-shutdown checks 3.8 Shut down the pipeline system in accordance with operating procedures 3.9 Administer Permit to Work system and confirm all identified maintenance and work complies with all issued permits

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
4. Record and report on operations	4.1 Report safety and environmental risks or faulty equipment to designated personnel 4.2 Interpret and maintain field inspection records and reports 4.3 Complete operations and production reports 4.4 Perform shift handover procedures
5. Control hazards	5.1 Identify hazards in work area 5.2 Assess the risks arising from those hazards 5.3 Implement measures to control those risks in line with procedures and duty of care
6. Identify and respond to abnormal situations	6.1 Monitor equipment frequently and critically throughout shift using own senses, and measured and indicated data 6.2 Monitor field data and instrumentation to ensure that product remains on specification 6.3 Identify impacts of changes upstream and downstream 6.4 Identify actual and developing situations that may require action 6.5 Take action to remedy abnormal situations according to operating procedures 6.6 Complete required documents outlining abnormal situation management and corrective action taken

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow monitor and evaluate process and select appropriate action.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete written reports and documentation.
- Oral communication skills to liaise and coordinate with team members, the control-room operator and customers.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS330 Communicate and monitor pipeline activities.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS338 Communicate and monitor pipeline activities

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS330 Communicate and monitor pipeline activities.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

  - all items on a schematic of the pipeline system, including:
  - principles of operation of plant and equipment, pipeline system functions within the design parameters and design philosophy
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - process information schemata of the pipeline system and associated facilities
  - architecture of the pipeline system
  - gas quality and analysis equipment operation
  - safety data sheets (SDS) information
  - emergency shutdown procedures
  - functions of major components and troubleshooting techniques
- abnormal situations and required actions, including:
  - communications disruptions
  - corrosion and hydrate formation
  - variations in flow temperature and/or pressure
  - failures of piping, valves or flanges
  - pipeline leakages
- hierarchy of control
- pipeline system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - pipeline control system
  - operating procedures
- abnormal situations must be relevant to pipeline control systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS339 Operate and troubleshoot wells and gathering systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS333 Operate wells and gathering systems.

Application

This unit describes the skills and knowledge required to operate wells and gathering systems in the field.

This unit applies to autonomous field operators who are required to demonstrate a significant understanding of the process and the equipment operation for work undertaken in any location in the field, including wells, nominated areas in the gathering system and other locations. Typically, the operator will be driving alone, on and off roads between wells and to and from the base site or plant.

This unit applies to an individual working alone or as part of a team or group. and working in liaison with other shift team members and the control-room operator, or other senior operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate well and gathering system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on well and gathering system and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine site and equipment checks, and complete logs and paperwork, taking action on readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor well and gathering system frequently and critically throughout shift using own senses and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare well and gathering system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations which may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up well and gathering system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Start up process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members, the control-room operator and senior operators.
- Numeracy skills to monitor field data, instrumentation and process parameters, including calculating volumetric flow rate and equipment efficiencies.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS333 Operate wells and gathering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS339 Operate and troubleshoot wells and gathering systems

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS333 Operate wells and gathering systems.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, including:
  - shutting down in an emergency.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of:
  - well design and construction
  - pumping
  - gas flow
  - gas and water separation
  - equalization
- all items on a schematic of the production unit, including:
  - operation of plant and equipment
  - downhole drawings (DHDs) and their application to plant and well operation
  - types of wells and gathering systems, including free-flow and pumped wells
  - draining and venting requirements
  - remote terminal unit functions, operation and abnormal situations
  - interactions between plant items and processes
  - operating parameters and integrity limits, and product specifications and tolerances including flange pressure and temperature ratings (basic), temperature, pressure and flow
  - impact of external factors (including variations in weather and feed)
  - procedures for starting, stopping, operating, controlling and isolating the system
  - functions of major components and troubleshooting techniques
- local lease and well operations requirements, arrangements and constraints
- well services handover and intervention procedures
- reservoir management, hydraulics, hydrates, hydrate inhibition, subsea as appropriate

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- physics and geology to the level of being able to provide an overview of the science of the well and gathering system process, including coal seam gas (CSG) formation, structure and completions, coal type and structure, well design and construction, fluid dynamics and statics as relevant to the system, natural gas and oil characteristics, hydrate formation, cathodic protection (basic), static electricity and earthing, corrosion control and chemical handling, and safety data sheets (SDS)
- well and gathering system abnormal situations and required action, including but not limited to:
  - leakage
  - solids (formation fines)
  - vibration
  - loss of control of pressure and/or flow
  - hydrate formation and blockages
  - liquid slugging
  - corrosion
  - erosion
  - sulphate-reducing bacteria
  - scale formation
  - equipment failure
  - change in product parameter (temperature, flow, pressure or level)
  - fouling or contamination
- hierarchy of control
- wells and gathering systems hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - escalation and reporting procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - well and gathering system
  - operating procedures.
- abnormal situations must be relevant to wells and gathering systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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PMAOPS341 Operate and troubleshoot cryogenic processes

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS340 Operate cryogenic processes.

Application

This unit describes the skills and knowledge required to operate and maintain a complex refrigeration or cryogenic system.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group. and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate cryogenic system according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on cryogenic system and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor cryogenic system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare cryogenic system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start up cryogenic system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS340 Operate cryogenic processes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS341 Operate and troubleshoot cryogenic processes

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS340 Operate cryogenic processes.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, for a complex refrigeration or cryogenic system.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the cryogenic system, including:
  - principles of operation of items of equipment in the system, and the basis of cryogenic operations
  - type of cryogenic plant, the component plant items and their functions
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
  - procedures for starting, stopping, operating, controlling and isolating the system
  - process control philosophies and strategies, and methods of controlling refrigeration systems (including pressure regulation)
  - functions of major components and troubleshooting techniques
- physics to the level of being able to provide an overview of the science of the cryogenic process
- types of industrial refrigerants and their applications, including self-refrigerants, brittle fracture, stress limits and the effects of thermal shock on materials of construction, vaporisation, condensation and impact on process
- cryogenic process abnormal situations and required action, including but not limited to:
  - operating temperatures not maintained
  - unstable or suboptimal operation (icing, moisture and fouling)
  - critical variables and outputs out of range
- hierarchy of control
- refrigeration and cryogenic system hazards:
  - possible causes
  - potential consequences

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- appropriate risk controls
- escalation and reporting procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - industrial cryogenic system
  - operating procedures
- abnormal situations must be relevant to cryogenic systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS342 Conduct pipeline pigging

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS335 Conduct pipeline pigging.

Application

This unit describes the skills and knowledge required to conduct pipeline pigging. It applies to any type of pig (pipeline inspection gauge) in or on a large plant/platform, including batching, cleaning, gauging, intelligent and foam pigs.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of pipeline operations in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. They may also be communicating with customers.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate the pipeline system for pigging (launching and receiving) according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Liaise with the relevant people to ensure correct flow conditions are in the pipeline system prior to launching 1.5 Verify that required permits have been issued 1.6 Prepare specified pig in accordance with requirements 1.7 Prepare pipeline for pigging operation in accordance procedures
2. Launch, monitor progress and receive pig	2.1 Prepare launching and receiving scraper barrels and intermediate site for launching and receiving operations 2.2 Load, launch and receive pig in accordance with procedures 2.3 Calculate pig travel speed during the pig's progress 2.4 Monitor and track progress of the pig in the pipeline system and take required action according to procedures
3. Interpret pigging data	3.1 Inspect the pig to determine wear and unexpected damage 3.2 Interpret pigging data from inspection, measurement and/or sample of the waste material gathered during pigging operations and take action in accordance with procedures 3.3 Dispose of waste materials according to procedures 3.4 Record data accurately to assist with assessment of pipeline condition
4. Identify and respond to abnormal situations	4.1 Monitor pig frequently and critically throughout shift using own senses, and measured and indicated data 4.2 Monitor field data and instrumentation to ensure that product remains on specification 4.3 Identify impacts of changes upstream and downstream 4.4 Identify actual and developing situations that may require action 4.5 Take action to remedy abnormal situations according to operating procedures 4.6 Complete required documents outlining abnormal situation management and corrective action taken

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete written reports and documentation.
- Oral communication skills to liaise and coordinate with team members, the control-room operator and customers.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS335 Conduct pipeline pigging.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS342 Conduct pipeline pigging

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS335 Conduct pipeline pigging.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of pigging
- all items on a schematic of the pigging system and functions of each, including:
  - operating parameters and integrity limits
  - reasons for pipeline pigging and the type of pig used for each application
  - correct valve sequences
  - expected system pressures for launching and receiving operations
  - prevention and mitigation measures for closure risks
  - the nature and condition of materials and flows entering and leaving the scraper barrels during the launching and receiving operations
- abnormal situations and required actions, including:
  - closure seal failure resulting in hydrocarbon release and possible explosion
  - closure fastening mechanism failure resulting in door striking technician
  - stuck pig
  - delayed pig
  - scraper enclosure leaks
  - leaking valves
  - damaged pig
- hierarchy of control
- pigging system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - pigging system
  - operating procedures
- abnormal situations must be relevant to pipeline pigging.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS343 Transfer bulk fluids into/out of storage facility

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS307 Transfer bulk fluids into/out of storage facility.

Application

This unit describes the skills and knowledge required to transfer bulk fluids into/out of a storage facility. The storage facility may be a land-based tank farm or a tanker at sea.

The storage facility or vessel will be monitored through the use of gas and fire detection (or other safety) equipment. Automatic sprinkler systems, deluges or other emergency response equipment will be activated in the event of fire/emergency detection and emergency shutdown systems will operate.

The equipment to be used in the transfer of product will be checked and tested before use. In some cases, before transferring, the circulation of product through pipelines will commence. This is usually for the purpose of pipeline chilldown and is required to minimise vapor pressure build-up in warm pipework.

A comprehensive fire water supply main may encompass the facility and/or be located on the vessel, and a suitable fire pump would be able to provide fire water requirements in emergencies.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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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. Operate storage and/or transfer facility according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards 1.4 Check for recent work undertaken on storage and transfer facilities and address outstanding and incomplete work 1.5 Check operational status and test safety systems to verify their operational condition and status, and report on all equipment faults 1.6 Manage products within the tank farm or at the platform in accordance with the site storage types, products and locations 1.7 Inspect storage and/or docking facilities for leaks or damage and ensure areas are safe, clean and equipment cannot be compromised by debris 1.8 Identify and report equipment requiring maintenance
2. Monitor storage facility	2.1 Confirm tank mixes, capacities and quality, and determine if these are being maintained within the agreed product requirements prior to transfer 2.2 Monitor gas detection, environmental and safety systems to ensure the storage area is a safe environment and that the safety of the area or vessel is not compromised 2.3 Communicate storage conditions to personnel to inform them of the operational condition and status of the storage facilities or vessel
3. Monitor load-out/transfer platform or facility according to procedures	3.1 Monitor load-out and/or transfer systems on the platform or in the terminal load-out/transfer area 3.2 Monitor gas detection, environmental and safety systems to ensure the load-out/transfer area is a safe environment 3.3 Inform personnel of the load-out/transfer area status, and conditions of the storage facilities
4. Conduct load-out/transfer according to procedures	4.1 Communicate operational status to required personnel prior to loading 4.2 Ensure that all startup permissives have been satisfied and product is ready for transfer

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Set and adjust pump flow rates to keep within agreed capacities 4.4 Monitor loading pump performance to keep within stated operational ranges and vibration limits 4.5 Take and record product samples
5. Identify and respond to abnormal situations during operation	5.1 Monitor facility frequently and critically throughout shift using own senses, and measured and indicated data 5.2 Monitor field data and instrumentation to ensure that product remains on specification 5.3 Identify impacts of changes upstream and downstream 5.4 Identify actual and developing situations that may require action 5.5 Take action to remedy abnormal situations according to operating procedures 5.6 Complete required documents outlining abnormal situation management and corrective action taken
6. Shut down and prepare facility for maintenance	6.1 Prepare facility to be shut down according to operating procedures 6.2 Complete pre-shutdown checks according to operating procedures 6.3 Shut down facility according to operating procedures 6.4 Identify, control and report shutdown hazards 6.5 Monitor shutdown and identify abnormal situations that may require action 6.6 Take action to remedy abnormal situations according to operating procedures 6.7 Shut down and changeover duty and standby equipment according to operating procedures 6.8 Isolate facility from energy sources
7. Prepare and start up facility	7.1 De-isolate and prepare facility to be returned to standby or service 7.2 Complete pre-start checks according to operating procedures 7.3 Start up facility according to operating procedures 7.4 Identify, control and report startup hazards 7.5 Monitor startup and identify abnormal situations that may require action 7.6 Take action to remedy abnormal situations according to operating

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS307 Transfer bulk fluids into/out of storage facility.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS343 Transfer bulk fluids into/out of storage facility

Modification History

Release 1. Unit code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS307 Transfer bulk fluids into/out of storage facility.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the storage/transfer system, including:
  - interactions between plant items and processes
  - operating parameters and integrity limits, product specifications and tolerances, tank and product mixes, flow rates and measures, tank capacities and percentages, process parameters and limits, including temperature, pressure, flow and pH
  - function and troubleshooting techniques of major components, including impellers, seals or bearings
  - procedures for starting, stopping, operating, controlling and isolating the facility
- physics and chemistry to the level of being able to provide an overview of the science of the storage/transfer process and the causes of head loss in piping systems, including comparison of fittings using the L_e/d concept, fluid and pipe material properties, flow geometry and static electricity principles
- storage facility abnormal situations and required actions, including:
  - insufficient and inappropriate storage for product and material
  - interruptions to loading through adverse weather conditions
  - product surging
  - control of temperature and pressure
  - variations in feed
  - vibration
  - tank capacities and space
  - problems with major components
- hierarchy of control
- storage and transfer hazards:

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- possible causes
- potential consequences
- appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - storage transfer facility and equipment
  - operating procedures
- abnormal situations must be relevant to the transfer of bulk fluids.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS344 Operate and troubleshoot flare systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to operate a flare system. This may involve operational work undertaken during normal operation, abnormal situation management, and the preparations undertaken for both flare equipment maintenance and reinstatement after maintenance.

The flare system must be an integrated flare system that is managed by a control room, and cannot be a simple ground flare or vent. 'Flare system' includes all items from the safety relief device through to the flare inclusive.

This unit of competency applies to autonomous operators who may work alone or as part of a team or group, reporting back to a control-room operator.

No licensing, legislative or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate flare system in accordance with procedures	1.1 Receive and give shift handover 1.2 Identify type of flare system and duty/standby status of relevant equipment 1.3 Monitor flare system frequently and critically throughout shift using own senses, and measured and indicated data

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Ensure the flare system is running within stated operational tolerances as requested by the control room operator
2. Identify and respond to abnormal situations	2.1 Identify problems within the flare system and problems in other units that will impact flare system operation 2.2 Take action to remedy abnormal flare situations in according to operating procedures, and as required by control room 2.3 Verify the asset integrity of all flare equipment and respond to integrity breaches according to operating procedures 2.4 Maintain appropriate communication with control-room operator during abnormal flare situations 2.5 Assess flare incidents and notify appropriate personnel of the incident according to operating procedures 2.6 Complete required documents outlining abnormal flare situation management including corrective action taken
3. Shutdown and prepare flare system for maintenance	3.1 Identify maintenance scope from workplace documentation 3.2 Prepare flare system for duty changeover according to operating procedures 3.3 Maintain appropriate communication with control-room operator during flare system duty changeover 3.4 Identify, control and report shutdown hazards 3.5 Isolate flare systems and utilities from operating sources according to operating procedures 3.6 Leave the shutdown flare system in a safe state for handover to maintenance
4. Prepare and start up flare system	4.1 Check that any maintenance or other performed work has been completed 4.2 De-isolate flare system equipment according to operating procedures 4.3 Complete flare system pre-start checks according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Maintain appropriate communication with control-room operator during the flare startup

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS344 Operate and troubleshoot flare systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- physical plant and equipment including:
  - all items on flare system schematics and the function of each
  - flare equipment terminology
- policies and procedures including:
  - where to locate latest version of workplace maintenance documents and procedures
  - required preparation and permits for different types of work to be done on the flare unit or its component items
  - isolation requirements
  - role within permit system when taking flare custody back from maintenance
  - de-isolation principles
- operating parameters including:
  - basic flare-specific physics and chemistry relevant to operation of the flare system equipment and of the relevant upstream processes, to the level of being able to interpret the science and extract factors controlling the flare operation:
  - smokeless combustion
  - negative pressures after flaring hot vapours
  - Joule–Thompson effect
  - air ingress
- flare duty of care obligations
- key operating principles of flare equipment and associated ancillary equipment
- flare safe operating envelope for relevant process variables
- interactions between plant items/processes and the flare
- factors affecting efficient operation of the equipment
- specific key alarms and appropriate actions

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- impact of external factors including variations in weather and feed
- the following signs of flare unit upset and corrective actions
  - high level or low level in knockout drum
  - icing up of flare lines or valves
  - low flare header pressure
  - loss of pilot gas or minimal gas flow
  - oxygen alarm
  - flame sensor alarm
  - black smoke – understanding the Ringelmann scale
  - extinguished pilot burners
  - flare height and noise levels
  - pulsing flame – relief valve chattering
- flare integrity limits, regulatory specifications and tolerances
- function and basic troubleshooting of major internal components
- the advantages and disadvantages of changing each of the variables during flare operational upsets
- correct methods of changing duty of flare equipment
- correct methods of reinstating and starting flare systems
- risk management including:
  - key safety systems and relevant procedures
  - knock on and escalation potential from process upsets and actions
  - emergency shutdown procedures and communication protocols
  - locations of muster points, spill kits, emergency response beacons and equipment relevant to the flare system
  - incident response role requirements within site safety management plan
  - appropriate application of hierarchy of control measures to control risks
- flare system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - flare systems
  - operating procedures
- abnormal situations must be relevant to flare operations.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS345 Operate and troubleshoot gas treatment process

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to operate a gas treatment process including filtration, dehydration, and acid gas and LPG removal.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures. It does not require the operation of a central control panel.

No licensing, legislative or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate gas treatment process according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on gas treatment process and

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust gas treatment process according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor gas treatment process frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Recognise actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shutdown and prepare gas treatment process for maintenance	3.1 Shut down gas treatment process according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate gas treatment process system from energy sources
4. Prepare and start-up gas treatment process	4.1 De-isolate and prepare gas treatment process to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Startup gas treatment process according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating

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Elements	Performance Criteria
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS345 Operate and troubleshoot gas treatment process

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on gas treatment process schematics, including:
  - gas treatment process system items, functions and troubleshooting techniques
  - principles of operation, gas treatment and extraction to company requirements
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow and pH
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating system
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the gas treatment process
- gas treatment system abnormal situations and required action, including but not limited to:
  - variation or loss of feed
  - unstable control of pressure, temperature level and flows
  - control equipment failure
  - process plant trips
  - change in atmospheric conditions (including rain, temperature, wind and lightning; still conditions)
  - poor quality indicated in test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- gas treatment process hazards:
  - possible causes

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- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - gas treatment system
  - operational procedures
- abnormal situations must be relevant to gas treatment operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS346 Operate and troubleshoot liquefaction process

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to operate liquefaction process.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures. It does not require the operation of a central control panel.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate liquefaction process in according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards 1.4 Check for recent work undertaken on liquefaction process system

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Elements	Performance Criteria
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust liquefaction process system according to operational parameters
2. Identify and respond to abnormal situations	2.1 Monitor liquefaction process system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shutdown and prepare liquefaction process for maintenance	3.1 Shut down liquefaction process system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify situations that may require action 3.4 Take action to remedy situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate plant and utilities from energy sources
4. Prepare and start-up liquefaction process	4.1 De-isolate and prepare liquefaction process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Startup liquefaction process system according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify situations that may require action 4.6 Take action to remedy situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS346 Operate and troubleshoot liquefaction process

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on liquefaction system schematics including:
  - liquefaction process system item types, functions and troubleshooting techniques
  - principles of liquefaction system operation to meet company requirements
  - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure, flow and pH
  - procedures for starting, stopping, operating, controlling and isolating the system
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of the liquefaction process
- liquefaction system abnormal situations and required action, including but not limited to:
  - variation or loss of feed
  - unstable control of pressure, temperature level and flows
  - control equipment failure
  - process plant trips
  - change in atmospheric conditions (including rain, temperature, wind and lightning, still conditions)
  - poor quality indicated in test results
  - analyser inaccuracy or malfunction
- hierarchy of controls
- liquefaction process hazards:
  - possible causes
  - potential consequences

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- appropriate risk control
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - liquefaction system
  - operating procedures
- abnormal situations must be relevant to liquefaction operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS347 Create and conduct isolations in the workplace

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to isolate and prepare a plant for maintenance work, maintain isolations, remove isolation and return a plant to service.

This unit of competency applies to operators, maintainers and those in similar roles who are required to create and conduct isolations and de-isolations, and reinstate equipment in an industrial installation. The person will have detailed operational and process knowledge and may work alone or as part of a team. The person will usually report through to a permit co-ordinator, supervisor or central-control-room operator.

Creation and implementation of the isolation requires appropriate consideration of known plant equipment and/or systems not functioning according to design. This typically includes but is not limited to passing valves, blocked lines, drains and system dead legs.

No licensing, legislative or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

PMASUP244 Prepare and isolate plant

Competency Field

Operations

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 isolations according to procedures	1.1 Communicate with relevant stakeholders to confirm the scope of work, and the need for timing of the isolation 1.2 Identify hazards in the system that need to be controlled to a state of

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	zero energy 1.3 Create appropriate isolation documents using current workplace isolation procedures 1.4 Verify isolation design 1.5 Submit isolation documentation according to workplace isolation submission chain-of-custody requirements
2. Conduct isolations	2.1 Confirm with stakeholders that isolation is ready to proceed 2.2 Conduct the isolation according to isolation design and operating procedures 2.3 Remove energy input and hazardous inventory in accordance with operating procedures 2.4 Ensure isolation integrity is performed according to operating procedures 2.5 Participate in appropriate handovers of equipment and isolation documentation according to operating procedures
3. Maintain Isolations	3.1 Maintain isolation integrity according to operating procedures 3.2 Take corrective action when isolation integrity is no longer effective
4. Conduct de- isolations	4.1 Confirm process plant is mechanically complete 4.2 Obtain de-isolation documentation according to operating procedures 4.3 De-isolate and reinstate plant according to operating procedures 4.4 Maintain appropriate communication with relevant stakeholders 4.5 Finalise documentation according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS347 Create and conduct isolations in the workplace

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- physical plant and equipment including:
  - the equipment/process being isolated
  - energy sources relevant to plant equipment
- policies and procedures including:
  - methods of creating isolations
  - methods of de-energising and isolating energy sources
  - the scope/boundaries of own role when creating and conducting the isolations
  - safety, emergency and hazard control
  - work permit systems
  - risk control measures and procedures
  - hierarchy of control
  - isolation requirements
  - methods of purging, venting, bleeding, draining and flushing
  - isolation chain of custody and handover protocols
  - communications
  - environmental management including controlling releases
  - duty of care requirements
  - standard operating procedures (SOPs)
  - work instructions
  - safe work method statements (SWMS)
  - document control
- operational parameters including:
  - methods and equipment used for draining and purging to attain zero energy

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  - decontamination methods and requirements for various materials and situations
  - significance of time allowed for draining, purging and ventilation
  - fluid dynamics relating specifically to draining piping systems, including:
    - the ability of a liquid to ‘hang-up’ in pipework
    - the importance of identifying high-point vents to release gas/vapours and low point drains to release liquids
    - how to determine the amount of liquid drained from a piping section to ascertain/prove that draining process has been effective
  - the potential effects of creating a vacuum by not draining correctly (e.g. by pulling a vacuum behind a slug of liquid)
  - the ALARP (as low as reasonably practicable) principle
  - importance of appropriate rates of change for pressure and temperature for vessels and other plant equipment
- risk management including:
  - the chemical and physical properties of the energy sources being isolated including one or more of the following:
    - electricity (mains, solar and by generator)
    - chemicals and fuels
    - heat and steam
    - pressure, such as compressed air and water, hydraulic oil and other fluids under pressure
    - energy-storing devices such as batteries, springs, flywheels, accumulators and capacitors.
  - trapped pressure
  - site requirements in completion of bleed logs.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment and its associated energy sources
  - operating procedures
  - paperwork must include:
    - isolation register(s)
    - lock-out/tag-out register(s)
    - appropriate sign-offs
    - any reports, permits/work packs, and documentation required by the job/organisation
    - filing of documentation in accordance with workplace protocols.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS348 Operate safety, protection and shutdown systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to operate safety, protection and shutdown systems. This unit of competency applies to operators who, as part of their duties, are required to operate safety, protection and shutdown systems during startup, normal operation and abnormal situation management.

This unit of competency applies to autonomous operators who may work alone or as part of a team or group, reporting back to a control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operator

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. Operate safety, protection and shutdown systems according to procedures	1.1 Receive and give shift handover 1.2 Identify the safety, protection and shutdown systems provided on the plant and whether they are activated locally, remotely or both 1.3 Locate field-based activation points and the safety, protection or shutdown systems they trigger 1.4 Identify safety, protection and shutdown systems including the various alarms and beacons that annunciate and/or flash 1.5 Complete controlled valve status registers according to operating

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	procedures 1.6 Swap over duty of pressure safety valve systems according to operating procedures 1.7 Ensure safety, protection and shutdown systems are working within observed process safety guidelines
2. Isolate and maintain safety, protection and shutdown systems	2.1 Confirm scope of work 2.2 Prepare to isolate or override safety, protection and shutdown systems according to operating procedures. 2.3 Identify the risks associated with applying overrides of safety, protection and shutdown systems and equipment. 2.4 Identify the risk mitigation process when applying overrides of safety, protection and shutdown systems and equipment. 2.5 Isolate and reinstate pressure safety valve systems according to workplace procedures 2.6 Perform pressure safety valve systems duty changeover in accordance with operating procedures 2.7 Log and communicate isolation and override status of safety, protection and shutdown systems and equipment according to operating procedures
3. Identify and respond to abnormal situations	3.1 Monitor safety, protection and shutdown systems frequently and critically throughout shift 3.2 Identify the type of hardware or software changes that may affect safety, protection and shutdown systems 3.3 Identify the early warning signs of existing and developing abnormal situations relevant to plant 3.4 Identify situations that warrant local safety, protection and/or shutdown system activation 3.5 Identify the consequences and risks of activating or not activating the safety, protection and shutdown systems 3.6 Demonstrate the field-based actions that should be taken when each of the safety, protection and shutdown systems are activated and re-armed

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Foundation Skills

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS348 Operate safety, protection and shutdown systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- physical plant and equipment, including:
  - the main items on the safety, protection and shutdown systems schematics and the function of each
  - safety, protection and shutdown systems equipment terminology
  - specific key safety, protection and shutdown systems alarms and appropriate actions
  - locations of muster points, emergency-response beacons and equipment relevant to the safety, protection and shutdown systems
- policies and procedures, including:
  - safety, protection and shutdown systems duty-of-care obligations
  - required preparation and approvals required for different types of work to be completed on the safety, protection and shutdown systems unit or their component items
  - emergency shutdown procedures and communication protocols
  - incident response role requirements within the Site Safety Management Plan when safety, protection and shutdown systems are activated
  - safety, protection and shutdown system critical-function testing regimes and their own role within those regimes
- operational parameters including:
  - correct methods of activating, resetting the safety, protection and shut down systems
  - understanding of the Cause-and-Effects diagrams of the safety, protection and shut down systems
  - specific actions taken upon activation of the safety, protection and shutdown systems
  - specific key operating principles of safety, protection and shutdown systems equipment and associated ancillary equipment

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    - safety, protection and shut down systems activation parameters, integrity limits, and regulatory specifications and tolerances
- risk management including:
    - override management process
    - impacts that activation of the emergency shutdown and safety systems have on the process safety being operated
    - impacts that activation of the emergency shutdown and safety systems have on the relevant upstream and downstream processes to the level of being able to make sound decisions regarding activation
    - impact of external factors on safety, protection and shutdown systems
    - appropriate application of hierarchy of control to manage risks
- safety, protection and shutdown systems hazards:
    - possible causes
    - potential consequences
    - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
    - safety protection and shutdown systems
    - operating procedures
- abnormal situations that would trigger the activation of safety, protection and/or shutdown system.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS349 Operate and troubleshoot hydraulic systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot hydraulic systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations.

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. Operate hydraulic systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare hydraulic systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up hydraulic systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS349 Operate and troubleshoot hydraulic systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on hydraulic systems including:
  - hydraulic systems items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - hydraulic system control philosophies and strategies
  - interactions between plant items and hydraulic systems
- basic physics and chemistry to the level of being able to provide an overview of the science of the hydraulic systems
- hydraulic system abnormal situations and required action, including but not limited to:
  - variation or loss of hydraulic fluid
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- hydraulic system hazards:
  - possible causes

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- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of hydraulic systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS351 Operate and troubleshoot turret swivel systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot turret swivel systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate turret swivel systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare turret swivel systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up turret swivel systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	action 4.7 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS351 Operate and troubleshoot turret swivel systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on turret swivel systems including:
  - turret swivel system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and specifications and tolerances, including temperature, pressure and flow
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - operational philosophies and strategies
  - interactions between plant processes and turret swivel systems
- basic physics and chemistry to the level of being able to provide an overview of the science of turret swivel systems
- turret swivel system abnormal situations and required action, including but not limited to:
  - variation or loss of functionality
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - change in sea state and atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - hierarchy of control
- turret swivel system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of turret swivel systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS352 Operate and troubleshoot instrument and plant air systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot instrument and plant air systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate instrument and plant air systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare instrument and plant air systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up instrument and plant air systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS352 Operate and troubleshoot instrument and plant air systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on instrument and plant air systems including:
  - instrument and plant air systems items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, dew point and flow
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of the instrument and plant air systems
- instrument and plant air system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- instrument and plant air system hazards:

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- possible causes
- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of instrument and plant air systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS353 Operate and troubleshoot heating, ventilation and air conditioning systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot heating, ventilation and air conditioning (HVAC) systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

This does not include specific electrical skills and knowledge that are managed under State and Federal electrical legislation and regulation.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate HVAC systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes to system operation 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare HVAC systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up HVAC systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS353 Operate and troubleshoot heating, ventilation and air conditioning systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on HVAC systems including:
  - HVAC system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - HVAC system control philosophies and strategies
  - interactions between plant items and HVAC systems
- basic physics, and chemistry to the level of being able to provide an overview of the science of HVAC systems
- HVAC system abnormal situations and required action, including but not limited to:
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - analyser inaccuracy or malfunction
  - hierarchy of control
- HVAC system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of HVAC systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS354 Operate and troubleshoot inert gas generation systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot inert gas generation systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate inert gas generation systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare inert gas generation systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up inert gas generation systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS354 Operate and troubleshoot inert gas generation systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on inert gas generation systems including:
  - inert gas generation system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow, oxygen content and hydrocarbon content
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of inert gas generation systems
- inert gas generation system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- inert gas generation system hazards:

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- possible causes
- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of inert gas generation systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS355 Operate and troubleshoot fuel systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot fuel systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate fuel systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare fuel systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up fuel systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS355 Operate and troubleshoot fuel systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on fuel systems including:
  - fuel system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of the fuel systems
- fuel system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- fuel system hazards:
  - possible causes

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- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of fuel systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS356 Operate and troubleshoot water treatment systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot water treatment systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate water treatment systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on the system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare water treatment systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up water treatment systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS356 Operate and troubleshoot water treatment systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on water treatment systems including:
  - water treatment system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow and pH
  - operating procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the system
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of the water treatment systems
- water treatment system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- water treatment system hazards:

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- possible causes
- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of water treatment systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS357 Operate and troubleshoot produced water and water injection systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot produced water and water injection systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate produced water and water injection systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify impacts of changes upstream and downstream 2.3 Identify actual and developing situations that may require action 2.4 Take action to remedy abnormal situations 2.5 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare produced water and water injection systems for maintenance	3.1 Shut down system according to workplace procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to workplace procedures 3.5 Shut down and changeover duty and standby equipment according to workplace procedures 3.6 Isolate system from energy sources
4. Prepare and start up produced water and water injection systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to workplace procedures 4.4 Start up system according to workplace procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS357 Operate and troubleshoot produced water and water injection systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on produced water and water injection systems including:
  - produced water and water injection system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow, pH and oil in water concentration
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- basic physics and chemistry to the level of being able to provide an overview of the science of the produced water and water injection systems
- produced water and water injection system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control

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- produced water and water injection system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine workplace procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of produced water and water injection systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS358 Process design fundamentals

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to identify and apply key process design fundamentals relevant to an operator's own role.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. This does not require the operation of a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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 scope of process	1.1 Identify process feedstock, by-products and products 1.2 Identify main process flows 1.3 Identify tasks required to perform own role in process 1.4 Identify support stakeholders available to assist in process operation

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.5 Identify process design hazards and controls
2. Identify key components of plant process design	2.1 Identify function of major equipment components used in process 2.2 Identify function of major process control components used in process 2.3 Identify function of major safety components used in process 2.4 Identify human factor design components of process
3. Identify design and operating envelope	3.1 Identify safe operating envelope of major equipment operating variables 3.2 Identify alarms and trip parameters of major equipment operating variables 3.3 Identify process variables used to troubleshoot production issues 3.4 Identify what can initiate an emergency shutdown (ESD) event 3.5 Identify and conduct asset integrity routine duties 3.6 Identify work health and safety (WHS) and regulatory requirements of their role within plant 3.7 Identify impacts of changes upstream and downstream
4. Identify custody of information requirements	4.1 Identify document control process 4.2 Record observations on workplace documentation according to operational procedures 4.3 Escalate appropriate anomalies and deviations to relevant stakeholders 4.4 File workplace documentation according to procedures 4.5 Identify management of change process 4.6 Identify workplace deviation process

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS358 Process design fundamentals

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items relating to process design including:
  - principles of process design, including human factors
  - process design items, type, functions and troubleshooting techniques
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - emergency shutdown procedures
  - control philosophies and strategies
  - interactions between plant items and process design fundamentals
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the process design fundamentals
- management of change process
- document control process
- deviation management process
- process design fundamentals that control abnormal situations and the required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - process plant trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control

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- process design fundamental hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS359 Operate and troubleshoot process measurement and control systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot process measurement and control systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate local process measurement and control systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements and changes to normal process measurement and control parameters

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare local process measurement and control systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up local process measurement and control systems	4.1 Check for recent work undertaken on system and address any incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS359 Operate and troubleshoot process measurement and control systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on local process measurement and control systems including:
  - type and functions
  - troubleshooting techniques and response to error messages and alarms
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including engineering units and scale
  - operating procedures and correct methods of starting, stopping, operating, controlling isolating and de-isolating the systems
  - redundancy shutdown procedures and protocols
  - interactions between plant items and processes including but not limited to control loops, control valves, actuators and positioners
  - condition monitoring systems, their program interfaces and requisite checks
  - equipment safeguarding relevant to the systems and area
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the process measurement and control systems
- local process measurement and control system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - instrument readings that have no variance over time
  - energy source failure
  - interpretation from test results
  - analyser inaccuracy or malfunction

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  - hierarchy of control
- process measurement and control system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of process measurement and control systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS363 Operate and troubleshoot export systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot export systems. This unit does not include storage and offtake systems that may be complementary to export systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate export systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify export nomination requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shutdown and prepare export systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up export systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS363 Operate and troubleshoot export systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- nominations, metering and analysers
- all items on export systems including:
  - export system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
  - liaising with downstream facilities
  - equipment safeguarding relevant to the systems and area
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the export systems
  - this must include but be limited to the impact of corrosion inhibitor and dew point in the systems
- export system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)

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  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- export system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of export systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS367 Operate and troubleshoot cooling water systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot cooling water systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate cooling water systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters 1.7 Identify sampling requirements and chemical dosing
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare cooling water systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up cooling water systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS367 Operate and troubleshoot cooling water systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on cooling water systems including:
  - cooling water system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow and pH
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the cooling water systems
- cooling water system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- cooling water system hazards:
  - possible causes

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- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of cooling water systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS368 Operate and troubleshoot heating medium/hot oil systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot heating medium/hot oil systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate heating medium/hot oil systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare heating medium/hot oil systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up heating medium/hot oil systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New Unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS368 Operate and troubleshoot heating medium/hot oil systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on heating medium/hot oil systems including:
  - heating medium/hot oil system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
  - equipment safeguarding relevant to the systems and area
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the heating medium/hot oil systems
- heating medium/hot oil system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control

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- heating medium/hot oil system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of heating medium/hot oil systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS369 Operate and troubleshoot drain and vent systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot drain and vent systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate drain and vent systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards 1.4 Check for recent work undertaken on system and address

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare drain and vent systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up drain and vent systems	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to workplace procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS369 Operate and troubleshoot drain and vent systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on drain and vent systems including:
  - drain and vent system items, functions, troubleshooting techniques, and potential for overpressure
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure, flow and oxygen content
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
  - equipment safeguarding relevant to the systems and area
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the drain and vent systems
- drain and vent system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure inclusive of incorrect valve status
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind, lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction

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  - hierarchy of control
- drain and vent system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls
  - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of drain and vent systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875.

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PMAOPS370 Operate and troubleshoot condensate stabilisation systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit describes the skills and knowledge required to operate and troubleshoot condensate stabilisation systems.

This unit applies to autonomous operators who are required to demonstrate an understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown activities.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Operate condensate stabilisation systems according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report system hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Check for recent work undertaken on system and address outstanding and incomplete work 1.5 Perform routine checks, and complete logs and documentation 1.6 Adjust system according to operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor field system, data and instrumentation to ensure system operates according to specification 2.2 Identify actual and developing situations that may require action 2.3 Take action to remedy abnormal situations 2.4 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare condensate stabilisation systems for maintenance	3.1 Shut down system according to operating procedures 3.2 Identify, control and report shutdown hazards 3.3 Monitor shutdown and identify abnormal situations that may require action 3.4 Take action to remedy abnormal situations according to operating procedures 3.5 Shut down and changeover duty and standby equipment according to operating procedures 3.6 Isolate system from energy sources
4. Prepare and start up condensate stabilisation system	4.1 Check for recent work undertaken on system and address outstanding and incomplete work 4.2 De-isolate and prepare system to be returned to standby or service 4.3 Complete pre-start checks according to operating procedures 4.4 Start up system according to operating procedures 4.5 Identify, control and report startup hazards 4.6 Monitor startup and identify abnormal situations that may require action 4.7 Take action to remedy abnormal situations according to operating procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Numeracy skills to monitor field data, instrumentation and process parameters.
- Oral communication skills to liaise and coordinate with team members and control-room operator.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.

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

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS370 Operate and troubleshoot condensate stabilisation systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on condensate stabilisation systems including:
  - condensate stabilisation system items, functions and troubleshooting techniques
  - principles of operation
  - operating parameters and integrity limits, and product specifications and tolerances, including temperature, pressure and flow
  - workplace procedures and correct methods of starting, stopping, operating, controlling and isolating and de-isolating the systems
  - emergency shutdown procedures
  - process control philosophies and strategies
  - interactions between plant items and processes
- process-specific physics and chemistry to the level of being able to provide an overview of the science of the condensate stabilisation systems
- condensate stabilisation system abnormal situations and required action, including but not limited to:
  - variation or loss of supply
  - unstable control of pressure, temperature, level and flows
  - control equipment failure
  - system trips
  - change in atmospheric conditions (including rain, temperature, wind and lightning and calm weather)
  - poor quality from test results
  - analyser inaccuracy or malfunction
  - hierarchy of control
- condensate stabilisation systems hazards:

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- possible causes
- potential consequences
- appropriate risk controls
- reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - real industrial equipment located in either a live plant or a realistic simulated industrial environment
  - routine operating procedures.

Abnormal situations must include:

- industry incidents or events relevant to the operation of condensate stabilisation systems
- actions adhering to workplace policies and procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet – - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP348 Monitor and maintain cathodic protection systems

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP343 Monitor and maintain cathodic protection systems.

Application

This unit describes the skills and knowledge required to monitor and maintain cathodic protection (CP) systems and all such items of equipment that form part of the CP system.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities. Relevant legislation, industry standards and codes of practice within Australia must be applied.

This unit aligns with *Australian Standard AS 2885.3—2012 Pipelines—Gas and liquid petroleum Part 3: Operation and maintenance.*

Pre-requisite Unit

Nil

Competency Field

Support

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 organise operational and maintenance activities	1.1 Review previous reports and check for outstanding work orders or notices 1.2 Assemble equipment and plan maintenance activities 1.3 Take regular readings from CP system monitoring, test equipment

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	and interpret collected data 1.4 Identify CP faults and notify appropriate personnel 1.5 Compile reports based on the collected data and analyse to determine system maintenance and operational adjustments to optimise system integrity
2. Conduct CP system surveys	2.1 Interpret survey specifications to determine survey path and equipment requirement 2.2 Conduct preparation activities on CP system to enable survey to be carried out 2.3 Conduct CP surveys of the system and log and record results of the survey 2.4 Fault-find and diagnose operating CP systems 2.5 Download collected survey data to allow a report to be compiled about survey findings
3. Recommission the system	3.1 Recommission the system to meet system operational requirements 3.2 Restore site to meet environmental and operational requirements 3.3 Compile and update records and drawings to reflect the repair or modification 3.4 Maintain incident records according to procedures
4. Identify and respond to abnormal situations during operation	4.1 Monitor equipment frequently and critically throughout shift using own senses, and measured and indicated data 4.2 Monitor field data and instrumentation to ensure that product remains on specification 4.3 Identify impacts of changes upstream and downstream 4.4 Identify actual and developing situations that may require action 4.5 Take action to remedy abnormal situations according to operating procedures 4.6 Complete required documents outlining abnormal situation management and corrective action taken

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP343 Monitor and maintain cathodic protection systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP348 Monitor and maintain cathodic protection systems

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP343 Monitor and maintain cathodic protection systems.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- Australian Standards relating to cathodic protection (CP) systems
- company-specific work organisations and workflows
- operations and functions of CP systems and equipment
- function of solar-powered power generation systems
- operations of 240 V power generation systems
- insulation and monolithic joints
- CP systems abnormal situations including causes and required action:
  - coating damage and deterioration
  - interference from other systems
  - anode not working
  - incorrect current output from central processing unit (CPU) and transmission (TR) unit
  - equipment faults and failure
- organisational procedures and documentation, including:
  - safety, emergency and hazard control
  - work permit systems
  - maintenance
  - standard operating procedures (SOPs)
  - survey specifications
- hierarchy of control
- CP systems hazards:
  - possible causes
  - potential consequences
- appropriate risk controls, including:

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- electricity
- gases and liquids under pressure
- equipment failures
- flammability and explosivity
- extreme weather.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - CP systems, tools, equipment and safety gear equipment
  - operating procedures
- abnormal situations must be relevant to cathodic protection systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP349 Monitor and control repairs and modifications on operational pipe

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP344 Monitor and control repairs and modifications on operational pipe.

Application

This unit describes the skills and knowledge required to monitor and control repairs and modifications on operational pipe. This includes all equipment and operations that form part of the pipeline system. It does not cover doing the repair/modification.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members, third parties and the control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

This unit aligns to *Australian Standard AS 2885.3—2012 Pipelines—Gas and liquid petroleum Part 3: Operation and maintenance.*

Pre-requisite Unit

Nil

Competency Field

Support

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 plan for pipeline repair or modifications	1.1 Communicate with personnel to identify and coordinate work requirements

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.2 Identify, control and report hazards 1.3 Examine the work area and ensure there is adequate access to the affected section of the pipeline 1.4 Obtain and review plans, instructions, relevant codes and drawings of proposed works 1.5 Ensure pipeline repairers are aware of site hazards and confirm that a Permit to Work has been issued 1.6 Convey information regarding the identified repair or modification to all interested parties 1.7 Inform third-parties of the need for access to the site
2. Monitor pipe welding, cutting and fabrication	2.1 Ensure the pipeline system is prepared in accordance with procedures and made safe for work to commence 2.2 Monitor the work to ensure that welding, stoppling or modifications are carried out according to the approved work plan 2.3 Verify that the necessary inspection and testing is conducted on the repaired or modified area 2.4 Confirm that test results are valid and that the work has been conducted to specification 2.5 Facilitate site clean-up to remove waste materials and debris and restore the site to original condition 2.6 Sign off the Permit to Work upon completion of the work 2.7 Ensure that environmental and heritage obligations are met
3. Recommission pipeline	3.1 Contact the control centre and advise that repairs are completed successfully and arrange for the system to be brought back online 3.2 Where the line has been manually isolated, restore pipeline operation when authorised to do so 3.3 Inspect the area of the pipeline subject to the Permit to Work for sign of leakage or defects 3.4 Confirm the pipeline is holding pressure and the system is meeting operational requirements
4. Complete reports and documentation	4.1 Complete site reports and documentation according to procedures and regulatory requirements 4.2 Ensure site drawings are updated to show accurate location of repair or modification

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.3 Liaise with relevant company departments to ensure all records and drawings are updated to reflect the repair or modification
5. Respond to abnormal situations	5.1 Monitor pipeline frequently and critically throughout shift using own senses, and measured and indicated data 5.2 Identify impacts of changes upstream and downstream 5.3 Identify actual and developing situations that may require action 5.4 Take action to remedy abnormal situations according to operating procedures 5.5 Complete required documents outlining abnormal situation management and corrective action taken

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members, the control-room operator, other personnel and third parties.
- Numeracy skills to interpret data, plans and diagrams.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP344 Monitor and control repairs and modifications on operational pipe.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP349 Monitor and control repairs and modifications on operational pipe

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP344 Monitor and control repairs and modifications on operational pipe.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- pipeline system operations and maintenance, including:
  - welding and cutting techniques on operational pipeline systems
  - hot tap and stoppling techniques
  - inspection techniques
  - pipeline codes and standards
  - pipeline drawings and plans
  - the operation of pipe cutting equipment
  - the operation of lifting and moving equipment
  - fitting of pipeline repair clamps and sleeves
  - excavation of pipelines
- regulatory framework
- pipeline system abnormal situations and required action including but not limited to:
  - leakages
  - blockages
  - instrument failure
  - mechanical failure
  - ice formation
  - flow variations
- organisation procedures and documentation, including:
  - safety, emergency and hazard control
  - work permit systems
  - maintenance

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  - quality assurance
  - standard operating procedures (SOPs)
  - site reports
- hierarchy of control
- pipeline system hazards:
  - possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - operation pipe, tools and equipment
  - operating procedures
- abnormal situations must be relevant to pipeline systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP350 Control corrosion

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP346 Control corrosion.

Application

This unit describes the skills and knowledge required to control corrosion in a plant, its equipment and/or plant pipelines using chemical or biological controls. This unit includes all equipment and operations that form part of the corrosion control system. Corrosion typically refers to any electrochemical process leading to the decay of metal. This unit may also be contextualised and applied to decay processes in non-metals.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Support

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 corrosion controls in use	1.1 Identify sites susceptible to corrosion on work area 1.2 Identify the causes and effects of corrosion at these sites 1.3 Identify the corrosion inhibitors used in work area 1.4 Identify and control hazards associated with corrosion and corrosion

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	control 1.5 Communicate with personnel to identify and coordinate work requirements
2. Dose corrosion inhibitor in accordance with procedures	2.1 Monitor indicators of rate of corrosion 2.2 Monitor inhibitor-dosing equipment according to operating procedures 2.3 Adjust rate of dosing according to operating procedures 2.4 Monitor inhibitor stocks according to operating procedures 2.5 Identify actual and developing situations that may require action 2.6 Take action to remedy abnormal situations according to operating procedures
3. Test plant for corrosion in accordance with procedures	3.1 Obtain permit clearance before commencing work activity 3.2 Complete testing activities as required by procedures 3.3 Examine test results and take action
4. Shut down and prepare dosing plant for maintenance	4.1 Check and verify safety systems to ensure that the unit has been made safe 4.2 Complete pre-shutdown checks according to operating procedures 4.3 Shut down dosing plant according to operating procedures 4.4 Identify, control and report shutdown hazards 4.5 Monitor shutdown and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures 4.7 Shut down and changeover duty and standby equipment according to operating procedures 4.8 Ensure isolation of all required energy sources and immobilisation of potential energy sources 4.9 Place locks and tags on isolation devices in accordance with the type of permit procedure
5. Prepare and start up dosing plant	5.1 Resolve coordination requirements with others at the site prior to commencing and during de-isolation activities 5.2 Remove locks and tags from isolation devices

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	5.3 Restore energy sources according to procedures 5.4 Identify, control and report startup hazards 5.5 Identify, correct and report situations that may endanger individuals or workers 5.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Writing skills to complete workplace documentation.
- Reading skills to follow written procedures and documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor dosing, stock, tests and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP346 Control corrosion.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP350 Control corrosion

Modification History

Release 1. Unit Code and Application changed. Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMASUP346 Control corrosion.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the plant item and the function of each, including:
  - relevant alarms and actions
  - principles of operation of dosing equipment
  - process parameters and limits, including temperature, pressure, flow and pH
- physics and chemistry to the level of being able to provide an overview of the science of the corrosion control process
- corrosion control procedures
- galvanic series
- electrochemical corrosion
- types of corrosion and causes of anode formation
- factors controlling the rate of corrosion
- types of corrosion inhibitors used and their action
- corrosion testing methods
- costs and hazards of corrosion
- hierarchy of control
- corrosion abnormal situations, causes and required actions
- hazards associated with corrosion inhibitors and relevant hazard controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - industrial plant, tools, equipment and safety gear

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- operating procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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FBPPHM2001 Follow work procedures to maintain Good Manufacturing Practice requirements

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 comply with relevant Good Manufacturing Practice (GMP) requirements and workplace quality standards in a pharmaceutical manufacturing facility.

The unit applies to individuals who follow GMP requirements to undertake routine pharmaceutical manufacture work, under supervision.

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

Pre-requisite Unit

Nil

Unit Sector

Pharmaceutical (PHM)

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 requirements of GMP related to own work	1.1 Locate sources of information on GMP requirements in the workplace 1.2 Identify GMP requirements for pharmaceutical manufacture tasks 1.3 Confirm specific GMP requirements for own work

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
2. Prepare for work	2.1 Ensure personal hygiene meets GMP requirements 2.2 Prepare, use, store and dispose of personal protective equipment and contamination prevention clothing according to GMP requirements and workplace procedures 2.3 Comply with area entry and exit procedures when moving around the workplace
3. Follow GMP requirements when carrying out work activities	3.1 Routinely monitor work area, materials and equipment to ensure compliance with GMP requirements 3.2 Handle raw materials, product and packaging components according to GMP requirements and workplace procedures 3.3 Identify contamination and follow appropriate control measures relating to work responsibilities and GMP requirements 3.4 Identify processes, practices or conditions which are inconsistent with GMP requirements and report according to workplace procedures 3.5 Maintain workplace cleanliness and tidiness to meet GMP requirements 3.6 Conduct work according to workplace environmental procedures 3.7 Complete documentation 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	• Identify and comprehend information about GMP requirements
Writing	• Record workplace information using appropriate language and in required format
Navigate the world of work	• Apply workplace procedures to own role and responsibilities • Understand main tasks, responsibilities and boundaries of own role
Interact with others	• Report operational and safety information to relevant personnel using required communication method

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPPHM2001 Follow work procedures to maintain Good Manufacturing Practice requirements	FDFPH1001A Follow work procedures to maintain Good Manufacturing Practice	Updated to meet Standards for Training Packages Changes to elements and performance criteria for clarity Code changed to reflect AQF alignment	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4

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Assessment Requirements for FBPPHM2001 Follow work procedures to maintain Good Manufacturing Practice requirements

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 followed work procedures to maintain Good Manufacturing Practice (GMP) and demonstrated each of the following points at least once:

- located and followed workplace information relating to GMP responsibilities
- maintained good personal hygiene consistent with GMP requirements, including:
  - making team leader or supervisor aware of reportable illness
  - removal of jewellery
  - removal of makeup
- used personal protective equipment and contamination prevention clothing according to workplace procedures
- used and stored personal clothing and footwear consistent with GMP requirements and workplace procedures
- followed workplace procedures when moving around the workplace to maintain GMP
- followed GMP requirements when carrying out work functions
- identified and responded to performance that fails to meet GMP requirements, including:
  - making adjustments
  - reporting to relevant personnel
- handled and disposed of materials that are contaminated or non-conforming
- identified and reported a situation that could compromise GMP requirements
- maintained work area in a clean and tidy state
- followed workplace procedures for documentation and recording.

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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:

- sources of advice on GMP requirements in relation to own work
- the role of GMP in preventing contamination and potential implications of non-compliance
- the relationship between GMP and the quality system, including:
  - personnel responsible for designing and managing GMP
  - personal role to maintain GMP
  - the role of internal and external auditors
- personal protective equipment and contamination prevention clothing requirements
- personal clothing and footwear use, storage and disposal requirements
- storage and handling requirements for raw materials, product and packaging components relevant to work role
- common types and sources of contamination in the work area including pest infestation
- control methods and procedures used in the work area to maintain GMP, including:
  - the purpose of control
  - the consequences of lack of control
  - control monitoring
- performance that is unacceptable or fails to meet specifications
- actions required in response to non-conformance
- workplace environmental procedures
- workplace procedures for reporting and recording information.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
  - a pharmaceutical manufacturing workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
  - personal protective equipment and contamination prevention clothing
  - commercial pharmaceutical production and packaging equipment
- specifications:
  - GMP information relating to the workplace
  - reporting and monitoring systems
  - workplace instructions and procedures
- relationships:
  - supervisor.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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FBPPHM3001 Apply Good Manufacturing Practice requirements

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 comply with relevant Good Manufacturing Practice (GMP) requirements and workplace quality standards in a pharmaceutical manufacturing facility.

The unit applies to individuals who apply GMP requirements to undertake pharmaceutical manufacture work. Individuals work under broad direction and take responsibility for their own work.

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

Pre-requisite Unit

Nil

Unit Sector

Pharmaceutical (PHM)

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 GMP as a regulatory concept	1.1 Locate sources of information relevant to work role from current Australian and other applicable regulatory frameworks for manufacturing pharmaceuticals 1.2 Locate sources of information relevant to work role relating to current global harmonisation of GMP compliance and product registrations

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
2. Identify requirements of GMP related to own work	2.1 Locate sources of information on GMP requirements in the workplace 2.2 Identify GMP requirements for pharmaceutical manufacture tasks 2.3 Confirm specific GMP requirements for own work 2.4 Identify GMP non-compliant situations and risks to product quality 2.5 Alert relevant personnel and take appropriate action according to GMP requirements and workplace procedures
3. Complete workplace documentation to support GMP	3.1 Use workplace procedures to identify GMP requirements for documentation 3.2 Record information, including calculations and test results according to workplace reporting procedures and GMP requirements 3.3 Certify records, including electronic records, according to GMP requirements
4. Identify and follow biosecurity requirements	4.1 Identify information appropriate to work role relating to biosecurity requirements 4.2 Follow workplace biosecurity requirements and responsibilities related to work role
5. Apply GMP requirements when carrying out work activities	5.1 Identify common forms of contamination 5.2 Conduct work according to workplace environmental procedures 5.3 Maintain workplace cleanliness and tidiness to meet GMP requirements 5.4 Identify and report signs of unacceptable plant or equipment condition, including calibration status 5.5 Identify GMP requirements for routinely monitoring work area, materials, equipment and product 5.6 Complete documentation according to workplace procedures
6. Ensure personal hygiene and conduct meet GMP requirements	6.1 Maintain personal hygiene to meet GMP requirements 6.2 Carry out hand washing according to best practice hygiene standards 6.3 Prepare, use, store and dispose of personal protective equipment and contamination prevention clothing according to GMP requirements and workplace procedures 6.4 Comply with area entry and exit procedures when moving around

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	the workplace
7. Participate in improving GMP	7.1 Identify processes, practices or conditions which are inconsistent with GMP requirements and report according to workplace procedures 7.2 Identify elements of GMP that help improve products and processes 7.3 Implement corrective action within level of responsibility

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 about GMP compliance requirements in workplace documentation
Writing	• Record workplace information using appropriate language and in required format
Navigate the world of work	• Apply workplace procedures to own role and responsibilities • Understand main tasks, responsibilities and boundaries of own role
Interact with others	• Report operational and safety information to relevant personnel using required communication method
Get the work done	• Use problem-solving techniques to address routine issues within level of responsibility

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPPHM3001 Apply Good Manufacturing Practice	FDFPH2001A Apply Good Manufacturing Practice procedures	Updated to meet Standards for Training Packages Additional elements	No equivalent unit

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requirements		and performance criteria Code changed to reflect AQF alignment	

Links

Companion Volume Implementation Guides are found in VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4

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Assessment Requirements for FBPPHM3001 Apply Good Manufacturing Practice requirements

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 applied Good Manufacturing Practice (GMP) requirements, and demonstrated each of the following points at least once:

- read and interpreted relevant instructions and labels applicable to GMP operations, including pictorial and written signs and instructions
- followed workplace information relating to GMP responsibilities
- completed forms and reports according to GMP requirements and workplace procedures
- recorded calculations and test results
- identified and responded to:
  - out-of-calibration equipment
  - out-of-specification or unacceptable raw materials, packaging components, final or part processed product
- maintained workplace cleanliness and tidiness to meet GMP requirements
- maintained personal hygiene consistent with GMP requirements, including:
  - making team leader or supervisor aware of reportable illness
  - removal of jewellery
  - removal of makeup
- cleaned and sanitised hands using recognised procedures for:
  - washing with soap and water
  - rubbing with an alcohol-based formulation
- used personal protective clothing and equipment and contamination prevention clothing according to GMP requirements
- provided accurate verbal and written descriptions of incidents or situations that did or could have:
  - compromised GMP compliance or product quality

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- provided the potential for product contamination.

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:

- GMP as a regulatory concept, including regulatory obligations of employees, and the potential implications of non-compliance
- sections of Australian and other applicable regulatory frameworks relevant to pharmaceutical manufacturing:
  - National Medicines Policy
  - Therapeutic Goods Act (TGA)
  - Therapeutic Goods Regulations
  - Manufacturing Principles
  - Therapeutic Goods Orders
  - GMP code of practice
  - other TGA guidelines relevant to product and market
  - state or territory regulations or legislation relating to environmental manufacturing and health and safety in the workplace
  - United States Food, Drug and Cosmetic Act and associated Codes of Federal Regulations and guidance
  - European directives and legislation of European Union member states applicable to pharmaceutical manufacturing.
- drivers of global harmonisation initiatives, including risks in the supply chain when operating in a global environment, including the following:
  - Pharmaceutical Inspection Co-operation Scheme (PIC/S) background and guidance
  - The International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) background and guidance
  - World Health Organization (WHO) background and guidance
- the relationship between GMP and the quality system, including:
  - personnel responsible for designing and managing GMP
  - personal role to maintain GMP
  - the role of internal and external auditors
  - quality procedures
  - quality assurance
  - quality control
  - risk management procedures
- personal clothing use, storage and disposal requirements and hygiene requirements, including:
  - informing team leader or supervisor of reportable illness
  - removal of jewellery
  - removal of makeup

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- personal clothing and footwear requirements for working in and moving between work areas
- workplace cleaning standards and responsibilities relating to own work, including:
  - waste collection
  - recycling, safe handling and disposal for different types of waste
  - safe handling and disposal of hazardous waste
- sections of the following Acts and Regulations related to biosecurity requirements of pharmaceutical manufacturing:
  - the Gene Technology Act 2000
  - Biosecurity Act 2015
  - Export Control Act 1982
  - Imported Food Control Act 1992
  - regulatory requirements which apply to the supply of materials which are genetically modified organisms
  - regulatory requirements relating to quarantining and use of materials and products
- awareness of common contaminants relevant to the work process, including:
  - microbiological, from materials, equipment, environment and personnel
  - physical, from equipment, environment and personnel
  - chemical, from other products or materials, including cleaning agents
- quality control methods and procedures, including the purpose of control and the consequence if not controlled
- properties, handling and storage requirements of raw materials, packaging components and final product
- GMP requirements for maintaining plant and process equipment
- GMP requirements for transferring of equipment and material between areas
- GMP requirements for equipment status labelling
- documentation systems and procedures, including:
  - recordkeeping to meet both workplace and legal requirements
  - responsibilities for reporting and recording information
  - batch documentation
  - cleaning records
  - training records
  - product and materials traceability procedures
  - controls and methods for ensuring electronic data integrity and paper data integrity
  - significance of certifying and verifying GMP records
- procedures for responding to out-of-specification or unacceptable process performance or outcomes
- awareness of controls to protect personnel and the environment from contamination by products and materials.

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Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
  - a pharmaceutical manufacturing workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
  - personal protective equipment and contamination prevention clothing
  - alcohol based hand cleanser
  - soap and water
  - commercial pharmaceutical production and packaging equipment
- specifications:
  - GMP requirements
  - workplace reporting procedures
  - workplace procedures related to GMP
  - workplace biosecurity requirements
  - workplace environmental 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

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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.

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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

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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

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- 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

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  - 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

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- 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

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HLTAID013 Provide First Aid in remote or isolated site

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to provide a first aid response to a casualty in a remote or isolated site over an extended period of time until medical assistance is provided, or evacuation occurs.

This unit applies to any site where medical assistance is likely to be delayed.

First aid is to be provided in line with guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies.

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. Prepare equipment for first aid response in remote or isolated site.	1.1. Evaluate information about remote or isolated site and identify potential injuries and illnesses requiring extended management. 1.2. Select first aid equipment and resources to manage a range of potential incidents, according to organisational emergency response and first aid procedures. 1.3. Select communication equipment to facilitate emergency response in remote or isolated site. 1.4. Complete pre-departure safety and serviceability checks on equipment.
2. Assess the situation.	2.1. Recognise and assess an emergency situation. 2.2. Ensure safety for self, bystanders and casualty. 2.3. Assess casualty to determine extent of first aid response. 2.4. Identify need for medical assistance and relay initial and

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	concise information. 2.5. Triage when multiple casualties are involved.
3. Apply appropriate first aid procedures.	3.1. Perform single-rescuer or two-rescuer cardiopulmonary resuscitation (CPR) in accordance with the ARC guidelines and availability of rescuers. 3.2. Provide first aid in accordance with established first aid principles. 3.3. Display respectful behaviour towards casualty. 3.4. Obtain consent from casualty where possible. 3.5. Use available resources and equipment to make the casualty as comfortable as possible. 3.6. Operate first aid equipment according to manufacturers' instructions. 3.7. Monitor the casualty's condition and respond in accordance with first aid principles. 3.8. Assess need to evacuate casualty, ability to transport to medical assistance or need for external assistance. 3.9. Administer medication as required according to medical instructions.
4. Communicate details of the incident.	4.1. Accurately convey incident details to emergency services. 4.2. Report details of incident in line with appropriate workplace or site procedures. 4.3. Complete applicable workplace or site documentation, including incident report form. 4.4. Maintain privacy and confidentiality of records and information in line with applicable statutory or organisational policies.
5. Coordinate evacuation and first aid activities until assistance arrives.	5.1. Determine need, in consultation with external services, to evacuate casualty. 5.2. Provide accurate information about location of incident, number of casualties, their condition and their position to enable deployment of appropriate resources. 5.3. Continue to provide treatment using available resources until help arrives. 5.4. Prepare site for evacuation of patient. 5.5. On approach, assist emergency services to locate the site of the incident. 5.6. Follow instructions and provide assistance to emergency services personnel during evacuation.
6. Review the incident.	6.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required. 6.2. Contribute to a review of the first aid response as required.

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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 HLTAID005 Provide first aid in remote situations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID013 Provide First Aid in remote or isolated site

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) guidelines 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
  - performing at least 2 minutes of ventilation and at least 2 minutes of compressions during a two-rescuer procedure on an adult resuscitation manikin placed on the floor
  - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
  - responding appropriately in the event of regurgitation or vomiting
  - demonstrating a rotation of operators with minimal interruptions to compressions
- 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
  - minor wound cleaning and dressing
  - nosebleed
  - shock
  - envenomation, using pressure immobilisation
  - fractures, dislocations, sprains and strains, using appropriate immobilisation techniques for remote situations and appropriate equipment improvisations

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  - head, neck and spinal injuries
  - hypothermia and hyperthermia
  - life threatening bleeding requiring use of tourniquets and haemostatic dressings
- 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
  - conducting a secondary survey assessment
  - assessing vital signs respirations, pulse, temperature
  - level of consciousness
  - 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
- conducted a basic triage for a multiple casualty 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 including those relevant to remote or isolated sites
  - 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
- in relation to the administration of medication

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  - legal requirements
  - the five rights
  - the responsibilities of the first aider
- 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 or injuries:
  - allergic reaction
  - anaphylaxis
  - asthma
  - non-life-threatening bleeding
  - burns
  - cardiac conditions, including chest pain
  - choking
  - diabetes
  - drowning
  - envenomation - all current treatments
  - eye injuries
  - fractures, dislocations, sprains and strains
  - head, neck and spinal injuries
  - hypothermia
  - hyperthermia
  - minor wounds
  - nose-bleed
  - poisoning
  - seizures
  - shock
  - sharps injuries
  - stroke
  - life threatening bleeding including use of tourniquets and haemostatic dressings

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- considerations when providing first aid including:
  - assessment, interpretation and documentation of vital signs, including normal clinical values for respirations, temperature, pulse and level of consciousness
  - how to conduct a secondary assessment of a casualty
  - basic triage processes
  - ongoing care requirements of casualty beyond initial treatment
- remote considerations in the provision of first aid, including:
  - the nature of remote or isolated sites and how this may impact on first aid management
  - key features, functions and limitations of different types of emergency communication equipment used in remote or isolated sites, and factors that affect choice:
    - radio equipment
    - mobile phones
    - satellite phones
    - alerting and tracking devices including personal locator beacons (PLBs)
  - management options relating to transporting casualty, including aero-medical evacuation
  - specific considerations contextualised to alpine, desert, marine, rural or remote settings and tropical environments
  - methods used to assist emergency services to locate incident sites and the key features, functions and limitations of resources used to assist:
    - verbal directions
    - flags
    - flares or smoke
    - fires
  - use of man-made and natural resources to supplement first aid equipment
  - content of remote area first aid kits
  - content of remote area medication boxes
- psychological impacts of first aid incidents on rescuers and how to seek help.
-

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Scenarios must concentrate on the significance of remote or isolated site circumstances.

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:

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- adult and infant resuscitation manikin following ARC guidelines for the purpose of assessment of CPR procedures
- adrenaline auto-injector training device
- AED training devices
- placebo bronchodilator and spacer device
- haemostatic dressings
- haemostatic wound packing trainer
- thermometers
- tourniquets
- tourniquet trainer
- different types of wound dressings and bandages
- blankets and items to manage a casualty for shock
- personal protective equipment (PPE)
- workplace injury, trauma or illness record, or other appropriate workplace or site incident report form, which includes space for recording vital signs of casualties
- remote first aid kits
- immobilisation devices.

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

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HLTAID014 Provide Advanced First Aid

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to provide an advanced 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 an advanced 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. Deploy resources to appropriate locations as required in line with appropriate workplace or site procedures. 1.5. Seek assistance from emergency services.
2. Apply appropriate first aid procedures.	2.1. Perform single-rescuer or two-rescuer cardiopulmonary resuscitation (CPR) in accordance with the ARC guidelines and availability of rescuers. 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 and ancillary equipment according to manufacturers' instructions.

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	2.7. Monitor the casualty's condition and respond in accordance with first aid principles.
3. Coordinate first aid activities until arrival of medical assistance.	3.1. Identify available resources required and establish communication links with appropriate personnel, emergency services or medical assistance as appropriate. 3.2. Deploy required resources to appropriate locations in an efficient and effective manner to ensure timely treatment of casualties. 3.3. Monitor the condition of casualties in accordance with first aid principles and workplace or site procedures. 3.4. Coordinate evacuation of casualties according to relevant evacuation procedures.
4. Communicate details of the incident.	4.1. Accurately convey incident details to emergency services. 4.2. Report details of incident in line with appropriate workplace or site procedures. 4.3. Complete applicable workplace or site documentation, including incident report form. 4.4. Maintain privacy and confidentiality of information in line with statutory or organisational policies.
5. Review the incident.	5.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required. 5.2. Arrange support services for personnel involved in the incident in accordance with relevant procedures. 5.3. 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 HLTAID006 Provide advanced first aid.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID014 Provide Advanced 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
  - performing at least 2 minutes of ventilation and at least 2 minutes of compression during a two-rescuer procedure on an adult resuscitation manikin placed on the floor
  - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
  - responding appropriately in the event of regurgitation or vomiting
  - demonstrating a rotation of operators with minimal interruptions to compressions
- 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

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  - shock
  - life threatening bleeding requiring use of tourniquets and haemostatic dressings
- responded to at least two simulated first aid incidents, one medical and one trauma 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
  - conducting a secondary survey assessment
  - assessing vital signs respirations, pulse, temperature
  - level of consciousness
  - 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
- coordinated a team of people to respond to a multiple casualty incident, including:
  - conducting a basic triage
  - demonstrating effective use of resources
  - demonstrating effective planning techniques
  - moving casualties using suitable extraction method and device and safe manual handling techniques.

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

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    - awareness of potential need for stress management techniques and available support for rescuers
- in relation to the administration of medication
    - legal requirements
    - the five rights
    - the responsibilities of the first aider
- 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
- considerations when providing first aid, including:
    - assessment, interpretation and documentation of vital signs, including normal clinical values for respirations, temperature, pulse and level of consciousness
    - how to conduct a secondary assessment of a casualty
    - basic triage processes
    - procedures for dealing with casualties who are aged or infirm
    - procedures for first aid management when dealing with major and minor accidents in the workplace or site
    - procedures when providing first aid to children
    - use of ancillary first aid equipment
    - co-ordination of resources
    - contents of first aid kits
- signs, symptoms and management of the following conditions or injuries:
    - abdominal injuries
    - allergic reaction
    - anaphylaxis
    - asthma
    - non-life-threatening bleeding
    - life-threatening bleeding including use of tourniquets and haemostatic dressings
    - burns
    - cardiac conditions, including chest pain

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  - childbirth
  - choking
  - crush injuries
  - diabetes
  - drowning
  - ear injuries and bleeding from the ear
  - 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
- substance misuse, including prescription and illicit drugs and alcohol
- psychological impacts of first aid incidents on rescuers and how to seek help.

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
- haemostatic dressings
- haemostatic wound packing trainer
- placebo bronchodilator and spacer device
- thermometers
- tourniquet trainer
- tourniquets

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- 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, which includes space for recording vital signs of casualties
- workplace first aid kits
- immobilisation and extrication devices.

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

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MEM04001B Operate melting furnaces

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers operating a metal melting furnace.

Application of the Unit

Application of the unit	This unit applies to the operation of singular or multi, coke, oil, gas fired or electric furnaces, the melting of a range of metals, and operational maintenance. Furnaces would primarily be used for continuous or staged bulk melting/smelting of metals, holding of hot liquids, or the melting of metals for production processes e.g. casting/moulding, galvanising, etc. **Band**: **A** **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM13004B	Work safely with molten metals/glass

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select materials	1.1. Requisitions are completed as required according to standard operating procedures. 1.2. Charge analysis is undertaken in accordance with standard operating procedures. 1.3. The charge analysis is converted to furnace charge weight using standard operating procedures. 1.4. Charge is weighed according to standard operating procedures.
2. Start up furnace	2.1. Furnace is inspected for any defects or damage. 2.2. Routine operational maintenance of furnace is undertaken to standard operating procedures. 2.3. Furnace is started up to standard operating procedures. 2.4. Faults are reported according to standard operating procedures.
3. Charge furnace	3.1. Emergency/safety procedures are identified and followed as necessary. 3.2. Materials are pre-heated if required according to standard operating procedures. 3.3. Materials are charged into furnace using standard

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ELEMENT	PERFORMANCE CRITERIA
	operating procedures. 3.4. Suitable areas for emergency unloading of molten metal are identified and kept available.
4. Monitor furnace	4.1. Furnace is maintained at optimum operating condition to standard operating procedures. 4.2. Sample for chemical analysis is taken and remedial action is applied as required to standard operating procedures. 4.3. Furnace is drossed and/or degassed to standard operating procedures. 4.4. Temperature of metal is checked and adjustment made if necessary.
5. Tap or unload the furnace	5.1. Quantity of the required metal is identified. 5.2. Tap rate is carried out to standard operating procedures. 5.3. Tapping or unloading is undertaken and completed safely according to standard operating procedures.
6. Shut down furnace	6.1. Shut-down of furnace is completed to standard operating procedures. 6.2. Routine operational maintenance of furnace is undertaken to standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • reading and interpreting routine information on written job instructions, specifications, standard operating procedures relevant test data sheets and other standard workplace forms. May include drawings for furnace operation • following oral instruction • entering routine and familiar information onto proformas and standard workplace forms • identifying faults and areas for routine repair of the furnace and performing routine maintenance as necessary

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REQUIRED SKILLS AND KNOWLEDGE
• following procedures for starting and closing down the furnace • deciding on charge materials • weighing charge materials • feeding materials into furnace • measuring metal temperature and correcting as necessary • sampling for chemical, carbon equivalent and wedge tests • degassing as necessary • deslagging/drossing • tapping the metal
Required knowledge
Look for evidence that confirms knowledge of: • refractory conditions, faults, and routine repair • condition of cooling water supply • starting procedures for different types of furnaces • metallic charge materials and alloying elements • weighing procedures and scale types • correct order of loading of different charge materials • thermocouple condition monitoring and adjustment mechanism for furnace • interpretation of carbon equivalent and wedge test results • degassing procedures including tablet, lance and other procedures • coagulant agents, application procedures and slag removal procedures • close-down procedures • applicable industry standards, national/Australian standards, NOHSC guides, State/Territory regulatory codes of practice/standards • use and application of personal protective equipment • safe work practices and procedures • hazards and control measures associated with operating melting furnaces

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must

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EVIDENCE GUIDE	
	be able to operate a melting furnace. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with operating melting furnaces or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Furnace	Singular or multi, coke, oil, gas fired or electric induction, arc and resistance furnaces
Operational maintenance	Routine lubrication, cleaning, routine repair/repointing of refractory

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Casting and moulding

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MEM05012C Perform routine manual metal arc welding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers preparing the materials and carrying out routine manual metal arc welding (MMAW).

Application of the Unit

Application of the unit	This unit applies in a maintenance or manufacturing environment where the welding is not required to meet an Australian standard or equivalent. Fillet and butt welds would typically be performed on low carbon/mild steels. Where welding is required to AS 1554 General Purpose or equivalent codes, occupational health and safety regulations and/or licensing requirements, Unit MEM05015D (Weld using manual metal arc welding process) should be selected. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Refer to Application of the Unit

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Identify weld requirements	1.1. Weld requirements are identified from job instructions. 1.2. Location of welds is identified in accordance with standard operating procedures and job specifications.
2. Prepare materials for welding	2.1. Materials are cleaned and prepared ready for welding.
3. Prepare equipment for welding	3.1. Welding equipment is set up correctly. 3.2. Correct electrodes are selected to suit application and settings.
4. Perform routine welding using MMAW	4.1. Safe welding practices are applied. 4.2. Materials are welded to job requirements. 4.3. Welds are cleaned in accordance with standard operating procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • preparing materials and electrodes • setting up welding equipment • welding with MMAW • reading and interpreting routine information on written job instructions, specifications and standard operating procedures • performing measurements for joint preparation and routine MMAW
Required knowledge
Look for evidence that confirms knowledge of: • material and equipment preparation • properties and characteristics of materials and consumables • weld characteristics • equipment set-up and settings • MMAW processes and properties • post-welding treatments • safe welding practices • use and application of personal protective equipment

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to prepare materials and carry out routine manual metal arc welding (MMAW).

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EVIDENCE GUIDE	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, i.e. the candidate is not in productive work, then appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing routine manual metal arc welding or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT

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RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Materials	Low and mild carbon steel or similar
Prepared	Cleaning, setting up jigs, fixtures, clamps, joint preparation
Welding equipment	Welding leads, welding machines, electrode holder etc.
Cleaned	Slag and spatter, cleaning, using files and grinders

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Fabrication

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MEM07033 Operate and monitor basic boiler

Modification History

Release 1. Supersedes and is equivalent to MEM07033B Operate and monitor basic boiler

Application

This unit of competency defines the skills and knowledge required to perform start-up, take-over/handover, monitor, shutdown and storage of a basic boiler used for all purposes, including the generation of steam.

All work is carried out to applicable state/territory and national work health and safety (WHS) legislation, standards and codes of practice.

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, as appropriate should also be selected.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Machine and process operations

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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	**Carry out pre-operational checks**	2.1	Undertake pre-operational checks of boiler to plant operating procedures
		2.2	Identify maintenance requirements and report in accordance with procedures
3	**Maintain health and safety standards in work area**	3.1	Identify hazards and potential hazards and report according to SOPs
		3.2	Select hazard prevention/control measures, as required
4	**Start boiler and conduct hand-over/take-over procedures**	4.1	Start boiler and bring online safely, consistent with workplace procedures and production requirements
		4.2	Confirm operating status of boiler
		4.3	Maintain operating log and communicate boiler status/operation according to workplace procedures
5	**Operate, monitor and shut down boiler**	5.1	Operate boiler and monitor consistent with production and safety requirements
		5.2	Conduct boiler water quality tests and adjust boiler water quality to manufacturers' recommendations and workplace procedures, as required

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		5.3	Act upon boiler failures/emergencies according to workplace procedures and notify downstream users, if necessary
		5.4	Shut down boiler consistent with workplace procedures, production and safety requirements
6	**Carry out boiler shutdown for an internal inspection**	6.1	Shut down boiler for internal inspection
		6.2	Clean boiler internally and externally to manufacturers' recommendations and workplace procedures
7	**Store boiler in shutdown mode**	7.1	Identify manufacturers' recommendations and workplace procedures required for shutdown storage mode
		7.2	Store boiler in identified shutdown mode

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.

Pre-operational checks include one or more of the following:

- feed water supply
- boiler water level
- fuel supply/heat source
- boiler valves - their operation and position
- combustion air supply
- combustion equipment

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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.

Boilers include the following:	• single fixed combustion air supply, non-modulating single heat source and fixed firing rate
Hazards include one (1) or more of the following:	• chemical • thermal • manual handling • guarding of machinery • illumination of work area • rubbish and combustibles • leakage of steam and fuel
Monitor includes one (1) or more of the following:	• steam pressure • flame and combustion conditions • feed system and condensate returns • fuel system • water level • combustion management system • water management system • boiler and steam manifold fittings • soot blowers
Handover includes the following:	• previous load requirements • maintenance issue, including equipment isolated for maintenance • operational incidences • completing/reading operating log • general inspection of boiler to detect any defects • accept responsibility of boiler • noted equipment malfunctions • required equipment tests
Storage mode includes one (1) or more of the following:	• wet • dry • open condition • closed condition

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM07033B Operate and monitor basic boiler

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM07033 Operate and monitor basic boiler

Modification History

Release 1. Supersedes and is equivalent to MEM07033B Operate and monitor basic boiler

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
- safely conducting pre-operational checks of the boiler and reporting any faults or hazards
- starting and bringing the boiler online and confirming its operating status
- monitoring the boiler operation and conducting water quality tests, as required
- reacting effectively to any boiler emergency situations
- shutting down the boiler in the required condition, cleaning and putting into storage mode.

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)
- pre-operational checks, including:
  - feed water supply
  - boiler water level
  - fuel supply/heat source
  - boiler valves their operation and position
  - combustion air supply
  - combustion equipment
- procedures for identifying and reporting maintenance
- statutory requirements and workplace procedures for identifying and reporting hazards in the work area
- processes for starting a boiler, including:
  - heat input
  - warm up of the reticulation system
  - steam traps and steam line purge
  - systems operation
  - reticulation line pressure

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  - steam usage
  - supply
- processes for confirming operational status of boiler
- procedures for maintaining boiler operating log
- procedures for communicating boiler status and operation
- principles of boiler operation
- boiler fittings
- preparing boiler for inspection
- procedures for monitoring a boiler, including:
  - steam reticulation line pressure
  - usage, supply and quality of steam
  - combustion/heat source system
  - feed water system
  - fuel system combustion air supply
  - water level
  - boiler steam pressures
- operation of boiler control/safety devices
- location of inspection and explosion doors
- procedures for conducting boiler water quality tests
- feed water systems and treatment
- emergency procedures, including:
  - identification of emergency
  - isolation of heat source
  - selection and application of appropriate fire-fighting equipment
  - notification of downstream users
- processes and procedures, including:
  - confirming water level
  - cooling down
  - boiler pressure/vacuum
  - fuel/heat source isolation
  - removal of combustion equipment and water from boiler
  - isolation from any common connection
  - the opening of all access points required for inspection
- procedures for cleaning the boiler internally and externally
- various modes of boiler storage
- procedures for storing the boiler in open or closed condition.

Assessment Conditions

- Assessors must:

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  - have vocational competency in operating and monitoring a basic boiler 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

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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

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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

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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

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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

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- 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

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MEM09002B Interpret technical drawing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers interpreting technical drawing applying to any of the full range of engineering disciplines.

Application of the Unit

Application of the unit	Technical drawings may utilise perspective, exploded views or hidden view techniques. Drawings are provided to Australian Standard 1100 and/or Australian Standard 1102 and their equivalents from the full range of engineering disciplines. Standard symbols to Australian Standard 1100 and/or Australian Standard 1102 or equivalent are recognised in field of employment. Technical drawings may include symbol glossaries. Where any drawing, sketch, chart, diagram is only used as the technique for communication, then this unit does not apply: see Unit MEM12023A (perform engineering measurements) or Unit MEM16006A (Organise and communicate information). **Band**: **A** **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Select correct technical drawing	1.1. Drawing is checked and validated against job requirements or equipment. 1.2. Drawing version is checked and validated.
2. Interpret technical drawing	2.1. Components, assemblies or objects are recognised as required. 2.2. Dimensions are identified as appropriate to field of employment. 2.3. Instructions are identified and followed as required. 2.4. Material requirements are identified as required. 2.5. Symbols are recognised in the drawing as appropriate.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- checking the drawing against job requirements/related equipment in accordance with standard operating procedures
- confirming the drawing version as being current in accordance with standard operating procedures
- where appropriate, obtaining the current version of the drawing in accordance with standard operating procedures
- reading, interpreting information on the drawing, written job instructions, specifications, standard operating procedures, charts, lists and other applicable reference documents
- checking and clarifying task related information
- undertaking numerical operations, geometry and calculations/formulae within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

- application of AS1100.101 in accordance with standard operating procedures
- relationship between the views contained in the drawing
- objects represented in the drawing
- units of measurement used in the preparation of the drawing
- dimensions of the key features of the objects depicted in the drawing
- understanding of the instructions contained in the drawing
- the actions to be undertaken in response to those instructions
- the materials from which the object(s) are made
- any symbols used in the drawing as described in range statement
- hazard and control measures associated with interpreting technical drawings, including housekeeping
- safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to interpret technical drawings as described.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with interpreting technical drawings or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Interpret technical drawing	AS1100.101 is an extensive work and the candidate is not required to have complete familiarity with all its contents, the application of AS1100 would usually be in line with standard operating procedures; interpretation may require guidance particularly in respect to any geometric tolerancing

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Drawing, drafting and design

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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

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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

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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

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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

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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

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    - 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

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MEM09003B Prepare basic engineering drawing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers identifying the drawing requirements, preparing or making changes to engineering drawings, preparing an engineering parts list and issuing the drawings

Application of the Unit

Application of the unit	The unit applies to the fields of mechanical, electrical/electronic, fabrication, and fluid power. Specifications may be obtained from design information, customer requirements, sketches and preliminary layouts. Manual drafting and drawing equipment is used, or where a Computer Aided Design (CAD) system is used other units should also be considered. This unit applies to any of the full range of engineering disciplines. Where a more extensive Computer Aided Drafting System is used for design, then Unit MEM09009C (Create 2D drawings using computer aided design system), should also be considered. **Band**: **A** **Unit Weight**: **8**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Identify drawing requirements	1.1. Requirements and purpose of drawing are determined from customer and/or work specification and associated documents. 1.2. All data necessary to produce the drawing is identified and collected. 1.3. Drawing requirements are confirmed with relevant personnel and timeframes for completion are established.
2. Prepare or make changes to engineering drawing	2.1. Drafting equipment is selected appropriate to the drawing method chosen. 2.2. Drafting principles are applied to produce a drawing that is consistent with standard operating procedures

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ELEMENT	PERFORMANCE CRITERIA
	within the enterprise. 2.3. All work is undertaken safely and to prescribed procedure. 2.4. Completed drawing is approved in accordance with standard operating procedures.
3. Prepare engineering parts list	3.1. Components parts are identified and organised by component type and/or in accordance with organisation/customer requirements.
4. Issue drawing	4.1. Drawings and or parts lists records are completed in accordance with standard operating procedures. 4.2. Approved drawings and or parts lists are copied and issued to relevant personnel in accordance with standard operating procedures. 4.3. Approved drawings and or parts lists are stored and catalogued in accordance with standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • obtaining all relevant job requirements, data/information and specifications necessary to produce the drawing in accordance with workplace procedures • using drafting equipment appropriate to the drawing method chosen • producing/changing the drawing to conform with the relevant standard • undertaking all work safely and in accordance with workplace procedures • checking the completed drawing in accordance with standard operating procedures • producing the component parts list with part name, description of part, material specification or part number, quantities and all other details specified by the customer and/or organisational procedures • recording completed drawings and or parts lists in accordance with standard operating procedures • where appropriate, copying and issuing approved drawings and or parts lists in accordance with standard operating procedures

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REQUIRED SKILLS AND KNOWLEDGE

- handling and storing the approved drawings and or parts lists in accordance with standard operating procedures
- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- planning and sequencing operations
- checking and clarifying task related information
- undertaking numerical operations, geometry and calculations/formulae within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

- requirements and purpose of the drawing to be produced
- requirements and purpose of the engineering parts list
- sources of relevant data/ information
- timeframe for completion of the drawing(s)
- person(s) who can confirm drawing requirements
- method of drawing preparation
- the reasons for selecting the chosen drawing method
- procedures for producing an initial drawing
- procedures for changing an existing drawing
- drafting principles to be applied to the production/changing of a drawing
- standards to which the drawing is to be produced
- procedures for checking drawings
- the persons responsible for checking and approving drawings
- consequences of inappropriate/incomplete components parts lists
- procedures and reasons for recording completed drawings and or parts lists
- procedures for copying approved drawings and or parts lists
- procedures for issuing approved drawings and or parts lists
- the personnel to whom copies of approved drawings and or parts lists can be issued
- procedures for filing approved drawings and or parts lists
- procedures for safe handling and storage of drawings and or parts lists
- consequences of inappropriate handling and storage of approved drawings and or parts lists
- safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to prepare basic engineering drawings. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with preparing basic engineering drawing or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant personnel	Technical personnel, supervisors, manufacturers, suppliers, contractors, customers
Drafting equipment	Drafting and drawing equipment includes the use of Computer Aided Drafting systems
Drafting principles	Drawings are prepared in accordance with Australian Standard 1100.101, or equivalent, as required Interpretation of AS1100.101 or other problems are resolved in consultation with a supervisor
Records	Drawing records may include cataloguing, issuing security classifications, filing, preparing distribution lists
Issued	In hard copy, photographic, slide or transparency form including presentation as a single drawing and/or with other drawings, support documentation as a package

Unit Sector(s)

Unit sector	

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Co-requisite units

Co-requisite units		

Competency field

Competency field	Drawing, drafting and design

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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

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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

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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

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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

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- 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

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MEM11011B Undertake manual handling

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers lifting and moving materials manually.

Application of the Unit

Application of the unit	This unit applies to lifting and moving materials manually and/or using basic manual handling equipment in a wide range of environments. Maximum manual lifting weight is limited to National Occupational Health and Safety Commission (NOHSC) recommendations. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lift materials manually	1.1. Material weight is determined correctly utilising most appropriate technique, and risks associated with lifting are assessed. 1.2. Lifting techniques are undertaken to National Occupational Health and Safety Commission (NOHSC) and standard operating procedures. Types of movement, methods, storage, height and position are considered.
2. Move/shift materials manually	2.1. Appropriate equipment is selected where required. 2.2. Material is placed safely and securely on moving equipment. 2.3. Material is relocated ensuring safety of personnel and security of material. 2.4. Material is unloaded from moving equipment and placed in a safe and secure manner.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • identifying relevant standards and lifting techniques • assessing weight of material • selecting lifting equipment • working and communicating in teams • assessing risks • planning • reading and interpreting routine information on written job instructions, specifications and standard operating procedures. May include drawings • following oral instructions
Required knowledge
Look for evidence that confirms knowledge of: • manual handling techniques • hazards of incorrect procedures • NOHSC standards for manual handling • safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to move loads manually using appropriate aids.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

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EVIDENCE GUIDE	
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with moving loads manually or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT	
Material weight	Material weight is determined using scales or interpreting signage
Lifting techniques	Individual or team lifting, use of appropriate lifting equipment
Appropriate equipment	Hand trolleys, wheelbarrows, motorised/hand pallet trucks (not sit on), scissor lifts, boom lifts, hand carts, dedicated production or process lifting equipment such as baskets, spreader bars, cradles or the like attached to lifting equipment

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Materials handling

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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

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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

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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

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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

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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

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  - 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

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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)

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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.

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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

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Links

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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.

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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

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MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivelant 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

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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

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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.

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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

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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 equivelant 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

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Assessment Requirements for MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivelant 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.

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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

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- 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

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MEM16005A Operate as a team member to conduct manufacturing, engineering or related activities

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers operating as a member of a team, where operations and outcomes are dependent on the performance of the entire team.

Application of the Unit

Application of the unit	This unit applies to a range of team activities that are carried out within a section of a manufacturing, engineering or a related work environment. Activities are interdependent in nature, with each team member providing a critical component of the output. Effective interaction and collaboration between team members is required in order to achieve team goals. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units	

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Prerequisite units	

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Identify team goals and processes	1.1. Team goals and requirements are identified. 1.2. Processes in place to assist in meeting team goals are identified. 1.3. Workflow and processes are described. 1.4. Roles and responsibilities of team members are identified. 1.5. Relationships within team and with other work areas are identified.
2. Communicate and cooperate with team members	2.1. Effective interpersonal skills are used to interact with team members and to contribute to activities and objectives. 2.2. Formal and informal forms of communication are used effectively to support team achievement. 2.3. Team members are assisted as required to ensure team achieves goals and requirements.

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ELEMENT	PERFORMANCE CRITERIA
	2.4. Diversity is respected and valued in team functioning. 2.5. Views and opinions of other team members are understood and reflected accurately. 2.6. Workplace terminology is used correctly to assist communication.
3. Work as a team member	3.1. Tasks are performed in accordance with organisational and team requirements, specifications and workplace procedures. 3.2. Agreed reporting lines are followed using standard operating procedures.
4. Solve problems as a team member	4.1. Potential and real problems faced by team are identified. 4.2. Procedures for avoiding and managing problems are identified. 4.3. Problems are solved effectively and in a manner which supports team functioning.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- contributing to achievement of team goals
- communicating and cooperating with team members
- coordinating work effort with others
- applying effective interpersonal skills
- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- solving problems

Required knowledge

Look for evidence that confirms knowledge of:

- effective interpersonal strategies and skills:

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REQUIRED SKILLS AND KNOWLEDGE
• effective listening • basic speaking skills • use of terminology and jargon • giving and receiving feedback • checking and clarifying task-related information • interpreting instructions • basic conflict resolution • selecting modes and methods of communication • identifying and resolving communication breakdowns and barriers • principles of effective communication • relationships and roles within team and with others • reporting relationships and procedures • own responsibilities with respect to products/services to be provided by team • skills and competencies of the individual and other employees performing interdependent activities • team goals, objectives and task requirements • sources of technical expertise/assistance • appropriate forms of communication • hazards and control measures associated with team activities, including housekeeping • safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to operate in a work-based team environment.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

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EVIDENCE GUIDE	
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with operating in a work-based team environment or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

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RANGE STATEMENT	
regional contexts) may also be included.	
Team goals	Production or manufacturing output, deadlines and timelines, resource use, performance, mistake elimination targets, process improvements, maintenance activity, safety levels
Effective interpersonal skills	Basic listening and speaking skills, use of terminology and jargon, giving and receiving feedback, interpreting instructions, verbal and non-verbal modes and methods of communication, communication breakdowns and barriers, basic principles of effective communication
Formal and informal forms of communication	Meetings, documentation, updates, handover, signage, discussion, explanations, demonstration, electronic
Diversity	Ethnicity, age, gender, demographics, disability
Workplace terminology	Terminology - referring to equipment, processes, workplace areas, staff and procedures - specific to the processes and equipment used in the workplace

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Communication

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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

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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

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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

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Links

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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

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  - 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

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MEM18011 Shut down and isolate machines/equipment

Modification History

Release 1. Supersedes and is equivalent to MEM18011C Shut down and isolate machines/equipment

Application

This unit of competency defines the skills and knowledge required to isolate and shut down machines and equipment and applies to situations that require extensive system knowledge that exclude the straightforward starting/stopping of machinery/equipment through the use of simple switching, including use of emergency switches.

All shutdown and isolation must comply with relevant regulations, Australian Standards and legislative requirements governing isolation and shutdown.

Where 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:

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
MEM13015	Work safely and effectively in manufacturing and engineering

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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, job sheets or work instructions
		1.5	Identify any relevant regulations, Australian Standards and legislative requirements governing isolation and shutdown
2	**Shut down and isolate machine/ equipment**	2.1	Determine machine/equipment operational function
		2.2	Undertake shutdown/isolation sequence safely and to SOPs
		2.3	Ensure machine/equipment is depressurised/emptied/de-energised/bled to SOPs
		2.4	Verify safe shutdown/isolation of machine/equipment
		2.5	Install safety/security lock-off devices and signage
		2.6	Confirm shutdown and isolation complies with relevant regulations, Australian Standards and legislative requirements governing isolation and shutdown

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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.

Shut down/isolate includes one (1) or more of the following:	• isolation of mechanical and electrical drives • pipework (pressure) • rotating equipment utilising electrical lock-off isolators • mechanical and power driven valves
Machine/equipment includes one (1) or more of the following:	• manual • semi-automatic • automatic machines of a stand-alone, continuous production or process nature

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18011C Shut down and isolate machines/equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM18011 Shut down and isolate machines/equipment

Modification History

Release 1. Supersedes and is equivalent to MEM18011C Shut down and isolate machines/equipment

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 other applicable reference documents to shut down and isolate machines and equipment
- shutting down machines/equipment ensuring machine/equipment is depressurised/emptied/de-energised/bled according to procedures
- isolating machines/equipment safely in accordance with SOPs, relevant regulations, Australian Standards and legislative requirements governing isolation and shutdown and verifying safe isolation
- installing safety/security lock-off devices and signage.

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)
- operational function of the machine/equipment
- shutdown sequence
- procedures and safety precautions for shutting down and isolating the machine/equipment
- procedures for purging/de-energising the machine/equipment and reasons for doing so
- procedures for verifying machine/equipment shutdown and isolation and reasons for verifying
- relevant regulations, Australian Standards and legislative requirements governing isolation and shutdown
- safety/security lock-off devices and signage to be installed
- reasons and procedures for installing lock-off devices and signage
- reasons for ensuring the machine/equipment is left in a clean safe state.

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Assessment Conditions

- Assessors must:
  - have vocational competency in shutting down and isolating machines/equipment 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

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MEM18011C Shut down and isolate machines/equipment

Modification History

Single band identifier removed to clarify dual status.

Unit Descriptor

Unit descriptor	This unit covers isolating and shutting down machines and equipment.

Application of the Unit

Application of the unit	This unit applies to situations that require extensive system knowledge that exclude the straightforward starting/stopping of machinery/equipment through the use of simple switching, including use of emergency switches. Shut-down/isolation is undertaken autonomously or as part of teamwork. **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**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
1. Shut down machine/equipment	1.1. Machine/equipment operational function is determined and understood. 1.2. Shut-down sequence is undertaken safely and to standard operating procedures. 1.3. Machine/equipment is depressurised/emptied/de-energised/bled to standard operating procedures. 1.4. Safe shut-down of machine/equipment is verified. 1.5. Safety/security lock-off devices and signage are installed to standard operating procedures. 1.6. Machine/equipment is left in clean and safe state.
2. Isolate machine/equipment	2.1. Machine/equipment operational function is determined and understood. 2.2. Isolation methods and points are recognised and identified.

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ELEMENT	PERFORMANCE CRITERIA
	2.3. Isolation is undertaken safely and to standard operating procedures. 2.4. Safe isolation of machine/equipment is verified. 2.5. Safety/security lock-off devices and signage are installed to standard operating procedure. 2.6. Machine/equipment is left in clean and safe state.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- reading, interpreting and following information on written job instructions, specifications and other applicable reference documents
- checking and clarifying task-related information
- entering information onto proformas and standard workplace forms
- shutting down machine/equipment
- purging/de-energising equipment
- installing safety/security lock-off devices and signage\

Required knowledge

Look for evidence that confirms knowledge of:

- the operational function of the machine/equipment
- the shut-down sequence
- the procedures for shutting down and isolating the machine/equipment
- safety precautions for shutting down and isolating the machine/equipment
- procedures for purging/de-energising the machine/equipment and reasons for doing so
- procedures for verifying machine/equipment shut-down and isolation and reasons for verifying
- the safety/security lock-off devices and signage to be installed
- the reasons and procedures for installing lock-off devices and signage
- the reasons for ensuring the machine/equipment is left in a clean, safe state
- hazards and control measures
- use and application of personal protective equipment

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REQUIRED SKILLS AND KNOWLEDGE
• safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to shut down and isolate machines/equipment.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with shutting down and isolating machines/equipment or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate

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EVIDENCE GUIDE	
	must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Shut down/isolate	Shut down/isolation means and includes isolation of mechanical, electrical drives, pipework (pressure) rotating equipment etc. utilising electrical lock-off isolators, mechanical and power driven valves etc. in accordance with standard operating instructions. Relevant regulations, Australian standards and legislative requirements governing isolation and shut-down must be complied with
Machine/equipment	Manual, semi automatic and automatic machines of a stand-alone, continuous production or process nature.

Unit Sector(s)

Unit sector	

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Co-requisite units

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics

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MSL936003 Maintain quality system and continuous improvement processes within work or functional area

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL936001 Maintain quality system and continuous improvement processes within work or functional area. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to take responsibility for the day-to-day operation of the work or functional area and ensuring that quality system requirements are met and continuous improvements are initiated.

This unit applies to senior technical officers and laboratory supervisors working in all industry sectors. Quality audits and evaluations for the work area may be undertaken as an individual or as part of a team under broad direction from scientists/medical staff/engineers.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Competency Field

Quality

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Develop and maintain quality framework within work area**	1.1	Distribute and explain information about the workplace's quality system to personnel
		1.2	Encourage personnel to participate in improvement processes and to assume responsibility for quality outputs
		1.3	Allocate responsibilities for quality within work area in accordance with quality system
		1.4	Provide coaching and mentoring to ensure that personnel are able to meet their responsibilities and quality requirements
2	**Maintain quality documentation**	2.1	Identify required quality documentation, including records of improvement plans and initiatives
		2.2	Prepare and maintain quality documentation and keep accurate data records
		2.3	Maintain document control system for work area
		2.4	Contribute to the development and revision of quality manuals and work instructions for the work area
		2.5	Develop and implement inspection and test plans for quality controlled products
3	**Provide training in quality systems and improvement processes**	3.1	Analyse roles, duties and current competency of relevant personnel
		3.2	Identify training needs in relation to quality system and continuous improvement processes
		3.3	Identify opportunities for skills development and/or training programs to meet needs
		3.4	Initiate and monitor training and skills development programs
		3.5	Maintain accurate training records

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
4 **Optimise and report performance**	4.1 Review performance outcomes to identify ways in which planning and operations could be improved
	4.2 Enhance customer service through the use of quality improvement techniques and processes
	4.3 Adjust plans and communicate these to personnel involved in their development and implementation
5 **Evaluate relevant components of quality system**	5.1 Undertake regular audits of components of the quality system that relate to the work area
	5.2 Implement improvements in the quality system in accordance with own level of responsibility and workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Oral communication skills to:
  - interact effectively with auditors, supervisors, managers and quality managers, laboratory and production staff, customers and suppliers
  - gain commitment of individuals and teams to apply quality principles and practices
  - encourage ideas and feedback from team members when developing and refining techniques and processes.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Equivalent to MSL936001 Maintain quality system and continuous improvement processes within work or functional area, Release 1.

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Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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Assessment Requirements for MSL936003 Maintain quality system and continuous improvement processes within work or functional area

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL936001 Maintain quality system and continuous improvement processes within work or functional area. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- ensured that the quality system requirements of day-to-day operations in the work area are effectively met, over a period of 3 days/shifts.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- workplace business goals and key performance indicators (KPIs)
- workplace organisational structure, delegations and responsibilities, and information management systems
- relevant sections of national and international quality standards, codes and protocols that apply in work area
- workplace quality system, plans and documentation
- continuous/quality improvement techniques, such as Pareto charts; strengths, weakness, opportunities, threats (SWOT) analysis; and plan, do, check, act (PDCA)
- registration/licensing and/or National Association of Testing Authorities (NATA) accreditation requirements
- scientific, technical and workplace terminology; and technical developments in the sector (current methodologies, ranges and interpretations)
- types of quality audits:
  - regular checks of laboratory procedures
  - daily and weekly checks of specimen reception, instrumentation and results for control and standard samples to identify non-conformance and problem areas

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    - maintenance of appropriate certified reference materials
    - participation in external quality assurance programs
- workplace procedures for:
    - technical work performed in work area
    - workplace policy and procedure development processes
    - workplace communication
    - developing/amending and tracking documentation
    - recording and reporting
    - records management and maintenance
- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
    - sampling plans, workplace quality manual, quality (certification or registration) requirements, quality and customer data, audit documents, performance plans and reports, and training records and/or plans
    - workplace procedures relating to WHS, equal opportunity, environmental legislative requirements, and industrial awards and workplace agreements.
- modelling of industry operating conditions, including:
    - interactions with laboratory operations staff.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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MSL952001 Collect routine site samples

Modification History

Release 1. Supersedes and is equivalent to MSL952001A Collect routine site samples

Application

This unit of competency covers the ability to collect samples at field or production sites using specified equipment and standard or routine procedures.

This unit of competency is applicable to production operators, field assistants and laboratory assistants in all industry sectors.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

Nil

Competency Field

Sampling

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for sampling**	1.1	Confirm the purpose, priority and scope of the sampling request
		1.2	Liaise with relevant personnel to arrange site access and all necessary clearances/permits
		1.3	Identify site hazards and review workplace safety procedures

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		1.4	Confirm what samples are to be collected, from where, how and when
		1.5	Assemble all specified sampling equipment, safety equipment, materials and containers
		1.6	Conduct pre-use and cleanliness checks of all items to ensure they are fit for purpose
		1.7	Check all items against given inventory and stow them to ensure safe transport
2	**Conduct sampling**	2.1	Locate sampling points and services at the site
		2.2	Remove security devices, such as locks and covers as required
		2.3	Seek advice if the required samples cannot be collected or if procedures require modification
		2.4	Select and use required sampling equipment in accordance with given procedures
		2.5	Closely follow sampling procedures to obtain required samples and maintain their integrity
		2.6	Record all labelling information in accordance with workplace/legal traceability requirements
		2.7	Record sample appearance, environmental conditions and any other factors that may impact on sample integrity
		2.8	Replace security devices, such as locks and covers as required
3	**Finalise sampling**	3.1	Follow workplace procedures for the cleaning/decontamination of equipment and vehicle as necessary
		3.2	Check all equipment, materials and samples against inventory and stow for safe transport
		3.3	Liaise with relevant personnel to restore normal production and/or services as necessary

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		3.4	Maintain integrity of samples during transportation
		3.5	Deliver samples to the required collection point and complete all documentation to ensure traceability
		3.6	On return, check and document serviceability of equipment before storage
4	**Maintain a safe work environment**	4.1	Use established work practices and personal protective equipment (PPE) to ensure personal safety and that of others
		4.2	Minimise environmental impacts of sampling and generation of waste
		4.3	Dispose of all waste in accordance with workplace procedures

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.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories, laboratory safety, quality and environmental management, and sampling of materials
- national work health and safety (WHS) standards and codes of practice, national environmental protection measures, and national measurement regulations and guidelines
- specific codes, guidelines and procedures, such as National

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Association of Testing Authorities (NATA) accreditation requirements, and principles of good laboratory practice (GLP)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS); safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; waste minimisation and safe disposal procedures; and maps and site plans
- sampling procedures for specific samples, sites and clients (labelling, preparation, storage, transport and disposal)

Materials sampled

Materials sampled as part of job role include one or more of:

- gas or air samples
- water, wastewater, stormwater, sewage and sludge
- solid samples, such as soil, sediments, rocks, concrete, quarry and mining material, and solid wastes
- raw materials, start, middle, end of production run samples, and final products and materials used in production processes, including food and beverages
- hazardous materials and/or dangerous goods

Maintenance of integrity of samples

Maintenance of integrity of samples includes one or more of:

- use of appropriate containers and lids, sealing of sample containers
- purging of sample lines and bores
- decontamination of sampling tools between collection of consecutive samples
- use of appropriate preservatives
- temperature control, which may involve prevention of direct contact between the sample and coolant, and wrapping container in foil or wet newspaper
- transfer of sterile sample into sterile container
- monitoring of storage conditions
- workplace/legal traceability through appropriate sample labelling and records

Services

Services include one or more of:

- water supply, gas and electricity
- telecommunications
- irrigation, stormwater and drainage systems

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- production plant

Safety procedures

Safety procedures include, but are not limited to, one or more of:

- use of PPE
- handling, labelling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions and workplace procedures and regulations
- regular cleaning and/or decontamination of equipment
- use of machinery guards
- signage, barriers, service isolation tags, traffic control and flashing lights, lock out and tag-out procedures

Minimising environmental impacts

Minimising environmental impacts includes, but is not limited to, one or more of:

- replacement of soils and vegetation
- driving vehicles to minimise soil erosion and damage to fauna and vegetation
- appropriate disposal of surplus, spent or purged materials and hazardous waste
- recycling of non-hazardous wastes
- cleaning of vehicles and equipment to prevent transfer of pests and contaminants

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSL952001A Collect routine site samples

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Links

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Assessment Requirements for MSL952001 Collect routine site samples

Modification History

Release 1. Supersedes and is equivalent to MSL952001A Collect routine site samples

Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- locating services at sites
- collecting samples at field or production sites on at least three (3) occasions using specified equipment and standard/routine procedures
- collecting at least three (3) different types of samples
- collecting samples efficiently, safely and with minimal environmental impact in accordance with sampling procedures and plans
- maintaining the integrity and security of samples following safety procedures, workplace and/or legal traceability requirements
- completing sampling records using workplace procedures
- recognising own limitations and seeking timely advice
- liaising with others to access sites and conduct sampling efficiently.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- terminology and concepts, including sample, contamination, traceability, integrity and chain of custody, metrology and the international system of units (SI)
- types of samples, including grab samples (disturbed or undisturbed materials), composite samples (such as time, flow proportioned and horizontal/vertical cross section), and quality control samples (such as controls, background, duplicate and blanks)
- characteristics of product/materials sampled as part of job role
- purpose for which the samples have been collected
- function of key sampling equipment/materials and principles of operation
- sampling procedures covering labelling, preparation, storage, transport and disposal
- hazards, risks, environmental protection measures and work health and safety (WHS) procedures associated with routine sampling undertaken
- workplace procedures dealing with waste management, clean-up and spillage, handling, transport and storage of dangerous goods.

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Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
  - MSL972001 Conduct routine site measurements
- Holistic assessment methods include:
  - review of sampling documentation completed by the candidate
  - review of the quality of samples collected by the candidate
  - observation of the candidate collecting a variety of samples at a range of sites
  - feedback from supervisors and clients that sampling plans were followed
  - oral/written questioning about sampling and safety procedures.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
  - field or production sites to sample and a variety of sample types
  - sampling tools, containers, equipment and procedures.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience.
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with a laboratory about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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MSL954004 Obtain representative samples in accordance with sampling plan

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL954001 Obtain representative samples in accordance with sampling plan. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to obtain a range of samples that are representative of the source material and to prepare the samples for testing. All sampling activities are conducted in accordance with a defined sampling plan. This unit does not cover the subsequent testing of the samples.

This unit of competency applies to laboratory technicians in all industry sectors.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Competency Field

Sampling

Elements and Performance Criteria

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

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for sampling**	1.1	Confirm the sampling location, number and type of samples, and timing and frequency of sampling from workplace or client's sampling plan
		1.2	Liaise with relevant personnel to arrange site access and all necessary clearances and/or permits as required
		1.3	Select sampling equipment and conditions to achieve representative samples and preserve sample integrity during collection, storage and transit
		1.4	Check that all procedures are in accordance with client or workplace requirements, relevant standards and codes
		1.5	Identify site and sampling hazards and review workplace safety procedures
		1.6	Assemble and check all sampling equipment, materials, containers and safety equipment
		1.7	Arrange suitable transport to, from and around site as required
2	**Conduct sampling and log samples**	2.1	Locate sampling sites
		2.2	Conduct representative sampling in accordance with sampling plan and defined procedures
		2.3	Record all information and label samples in accordance with traceability requirements
		2.4	Record environment or production conditions and any atypical observations made during sampling that may impact on sample representativeness or integrity
		2.5	Transport all samples back to base according to standard operating procedures (SOPs) and relevant codes
3	**Prepare samples for testing**	3.1	Prepare sub-samples and back-up sub-samples that are representative of the source
		3.2	Label all sub-samples to ensure traceability and store in

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
			accordance with SOPs
		3.3	Follow defined preparation and safety procedures to limit hazard or contamination to samples, self, work area and environment
		3.4	Distribute sub-samples to defined workstations maintaining sample integrity and traceability requirements
4	**Address client issues**	4.1	Enter approved information into laboratory information management system (LIMS), as required
		4.2	Report all relevant aspects of the sampling and preparation phases in accordance with workplace procedures
		4.3	Ensure that information provided to client is accurate, relevant and authorised for release
		4.4	Maintain security and confidentiality of all client/workplace data and information
5	**Maintain a safe work environment**	5.1	Clean all equipment, containers, work area and vehicles according to workplace procedures
		5.2	Check serviceability of all equipment before storage
		5.3	Use defined safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other personnel
		5.4	Minimise the generation of wastes and environment impacts
		5.5	Ensure the safe collection of all hazardous wastes for appropriate disposal

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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.

Unit Mapping Information

Equivalent to MSL954001 Obtain representative samples in accordance with sampling plan, Release 1.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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Assessment Requirements for MSL954004 Obtain representative samples in accordance with sampling plan

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL954001 Obtain representative samples in accordance with sampling plan. Range of conditions removed. Assessment requirements amended.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- obtained samples from at least 3 different sampling points, that are representative of the source material and taken in accordance with a sampling plan.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of representative sampling, including:
  - representative samples
  - preservation of integrity of samples
  - maintaining identification of samples relative to their source, workplace and legal traceability
  - cost-effectiveness of sampling
  - consistency of sampling procedures
- function of key sampling equipment/materials and principles of operation
- sampling principles, including random, systematic and stratified sampling
- characteristics of product/materials sampled as part of job role and likely contaminants
- methods to maintain the integrity of samples
- maps and site plans
- links between quality control, quality assurance, quality management systems and sampling procedures
- site and sampling hazards and the links between following WHS procedures and personal and environmental safety, particularly at high risk sites
- workplace and/or legal traceability requirements

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- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - source material
  - a variety of sample types
  - sampling plans and procedures, sampling containers and sampling equipment, and sample preparation materials and equipment.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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MSL973013 Perform basic tests

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL973001 Perform basic tests. Foundation skills information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to prepare samples and perform tests and measurements using standard methods with access to readily available advice from supervisors.

This unit of competency applies to laboratory/field assistants working in all industry sectors. In general, they do not calibrate equipment and make only limited adjustments to the controls. They do not interpret or analyse results or troubleshoot equipment problems.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Competency Field

Testing

Elements and Performance Criteria

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

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Interpret test requirements**	1.1	Review test request to identify samples to be tested, test method and equipment involved
		1.2	Identify hazards and workplace controls associated with the sample, preparation methods, reagents and/or equipment
2	**Prepare sample**	2.1	Record sample description, compare with specification, record and report discrepancies
		2.2	Prepare sample in accordance with appropriate standard methods
3	**Check equipment before use**	3.1	Set up test equipment in accordance with test method
		3.2	Perform pre-use and safety checks in accordance with workplace procedures and manufacturer instructions
		3.3	Identify faulty or unsafe equipment and report to appropriate personnel
		3.4	Check calibration status of equipment and report any out-of-calibration items to appropriate personnel
4	**Perform tests on samples**	4.1	Identify, prepare and weigh or measure sample and standards to be tested
		4.2	Conduct tests in accordance with workplace procedures
		4.3	Record data in accordance with workplace procedures
		4.4	Perform calculations on data as required
		4.5	Identify and report out of specification or atypical results promptly to appropriate personnel
		4.6	Shut down equipment in accordance with operating procedures
5	**Maintain a safe work environment**	5.1	Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel
		5.2	Minimise the generation of wastes and environmental impacts
		5.3	Ensure safe disposal of laboratory and hazardous wastes

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	5.4 Clean, care for and store equipment and reagents as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to calculate simple quantities using appropriate equations, units, uncertainties and precision

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes MSL973001 Perform basic tests.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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Assessment Requirements for MSL973013 Perform basic tests

Modification History

Release	Comments
Release 1	This version was released in *MSL Laboratory Operations Training Package Release 2.0.* Supersedes and equivalent to MSL973001 Perform basic tests. Foundation skills information added. Range of conditions removed. Assessment requirements amended.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- prepared samples using different processes
- performed at least 3 basic tests or measurements using standard methods and procedures.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- concepts of metrology, including:
  - all measurements are estimates
  - measurements belong to a population of measurements of the measured parameters
  - precision, accuracy and significant figures
  - sources of error, uncertainty and repeatability
  - traceability
- international system of units (SI)
- purpose of tests performed as part of job role and principles of the standard methods/specifications used
- sample preparation processes relevant to job role
- typical basic tests and methods relevant to job role
- measurements used for typical tests
- function of key components of the test equipment, pre-use equipment and safety checks
- sources of uncertainty in measurement and methods for control
- workplace and/or legal traceability requirements
- interpretation and recording of test result, including simple calculations
- procedures for recognising and reporting of unexpected or unusual results
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - a standard laboratory equipped with basic test equipment, common measuring instruments, materials, standard methods, workplace procedures, SDS and equipment manuals.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa

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MSMBLIC001 Licence to operate a standard boiler

Modification History

Release 1. Supersedes and is equivalent to MSABLIC001 Licence to operate a standard boiler.

Application

This unit specifies the outcomes required to operate a standard boiler safely. This includes boiler start-up, handover, monitoring, shutdown and storage of a boiler that uses a single fuel source and does not have an air pre-heater, feed water heater, superheater, attempurator or desuperheater, simultaneous dual fuel firing capability or economiser attached.

This unit also covers the preparation for inspection procedures as specified in manufacturer recommendations, identification of maintenance requirements and relevant risk control measures.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations, High Risk Work, and meets Commonwealth, state and territory high risk work licensing requirements. Any alteration to the unit content or outcomes would result in a unit that is not acceptable to WHS/Occupational Health and Safety (OHS) regulators for the purpose of licensing.

Pre-requisite Unit

Nil

Competency Field

Unit Sector

Boiler operation (licensed)

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element
1	**Plan and prepare**	1.1 Follow standard operating procedures (SOPs)

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	for work	1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify potential workplace hazards and appropriate risk control measures consistent with appropriate standards to ensure the safety of personnel and equipment
		1.4	Locate and review appropriate records to prepare for boiler operation
		1.5	Identify the type of boiler and plan boiler operations according to procedures
		1.6	Identify appropriate personal protective equipment (PPE) in accordance with SOPs
		1.7	Identify suitable communication methods and confirm with appropriate personnel
2	**Start up boiler**	2.1	Apply risk prevention and risk control measures to the work area according to procedures
		2.2	Select communication equipment and inspect for serviceability
		2.3	Select all necessary equipment and inspect for operational effectiveness according to procedures, including establishing water level
		2.4	Check boiler visually for any damage or defects and report and record any found according to procedures with appropriate action taken
		2.5	Vent boiler to atmosphere prior to start-up, as required
		2.6	Carry out pre-start up checks on the boiler and bring the boiler online safely according to procedures
		2.7	Start up boiler according to procedures
		2.8	Identify maintenance requirements and any visual faults and report according to procedures
		2.9	Confirm, complete and log all maintenance and/or repairs and associated isolations and make the equipment serviceable

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3	**Monitor boiler operation**	3.1	Diagnose operating status of the boiler
		3.2	Maintain operating log clearly and accurately according to procedures
		3.3	Monitor boiler, valves, fittings and pressure gauges according to procedures
		3.4	Blow boiler water level gauges through both steam and water sides
		3.5	Test standby plant and equipment according to procedures
		3.6	Conduct boiler water quality tests, where required, and record the results according to procedures
		3.7	Adjust boiler water chemicals after tests, where appropriate and required according to procedures and notify downstream users, if necessary
		3.8	Activate the automatic blowdown and, where required, boiler is blown down to adjust total dissolved solids (TDS) levels to recommendations
		3.9	Communicate handover information regarding boiler status and operation clearly to relevant personnel according to procedures
		3.10	Respond immediately to any boiler emergency in accordance with procedures
4	**Shut down boiler**	4.1	Shut down the boiler for inspection according to procedures, as required
		4.2	Identify maintenance requirements and report any visual faults according to procedures
		4.3	Complete isolations associated with in-service maintenance according to procedures
		4.4	Clean boiler internally and externally to manufacturer recommendations and procedures, where required
		4.5	Complete boiler operating log for shutdown

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5	**Store boiler in shutdown mode**	5.1	Identify storage time and condition of storage, where required
		5.2	Store boiler in safe condition for access in accordance with manufacturer recommendations and procedures
		5.3	Test stored boiler water and chemicals, where required, and handle in accordance with procedures, where storage is for extended periods

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.

Boiler includes:

Fixed and modulating combustion controls and a single heat source. Operation includes a battery of boilers and boilers that have a single thermal or solar heat source.

Note: Boilers meeting the definition of ‘advanced boiler’ are excluded.

Standard boiler includes:

- vessel or an arrangement of vessels and interconnecting parts in which steam and vapour is generated or in which water or other liquid is heated above that of the atmospheric pressure by the application of:
  - fire
  - the products of combustion
  - electrical power
  - similar means
- fixed and modulating combustion controls, fixed and

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modulated air supply, a single fuel source and will have:

- boiler piping
- supports
- mountings
- valves
- gauges
- fittings
- controls
- boiler settings and directly associated equipment

Type of boiler includes one or more of the following:

- fire tube
- water tube
- once through boilers
- waste heat
- electrically heated
- novel or unique

Hazards include one or more of the following:

- asbestos lagging
- chemical hazards
- thermal hazards
- manual handling hazards
- machinery guard requirements
- hot exposed steam pipe
- leakage of steam
- leakage of fuel
- odour of gas
- fumes from a liquid chemical spill
- faulty/broken ladder or hand rail
- working at heights
- flammable liquids
- fire and explosion
- electrical hazards
- work area, including:
  - illumination
  - excessive noise from machinery
  - spillage of oil
  - rubbish and combustibles
  - obstruction

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Risk control methods include:	Risk control methods refer to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control: • elimination • substitution • isolation • engineering controls • administrative controls • personal protective equipment (PPE)
Appropriate standards include one or more of the following:	• legislation • codes of practice • manufacturer specifications • Australian Standards • technical standards (International) • industry standards (where applicable)
Procedures include one or more of the following:	• manufacturer guidelines (e.g. instructions, specifications or checklists) • industry operating procedures • workplace procedures (e.g. work instructions, operating procedures or checklists)
Equipment includes one or more of the following:	• gas monitoring equipment • water testing equipment • fire-fighting equipment • workplace first aid equipment • work platform and associated gear, including walkways
Communication methods include one or more of the following:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol

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Appropriate personnel includes one or more of the following:

- production workers
- maintenance workers
- supervisors and managers
- other boiler operators
- suppliers
- colleagues

Records include one or more of the following:

- operating log books
- maintenance records
- records of faults and potential faults
- isolation procedures
- safe operating procedures
- daily operating inspections
- repairs carried out according to manufacturer recommendations and operating procedures
- workplace record keeping requirements
- details of any daily or periodic maintenance work
- details of yearly programmed or additional maintenance work

Risk control measures include one or more of the following:

- barricades and controls
- machine guarding
- fall prevention
- pedestrian controls
- adequate illumination
- noise controls
- signage
- PPE

PPE includes one or more of the following:

- thermally insulated gloves
- hard hat protection
- ear protection (muffs or plugs)
- chemical resistant gloves and apron
- respiratory devices
- eye protection
- working protective gloves
- whole body fire-resistant clothing

Communication equipment includes one or more of the

- two-way radios
- mobile phones

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following:

- intercoms
- landline telephones
- pagers
- satellite phones
- computers

Pre-start up checks include:

- testing warning lamps or visual warning indicators
- control panel checks
- checks of feedwater supply system
- fuel supply/heat source system
- operation and position of boiler valves
- combustion air supply system
- boiler water level
- essential fittings and gauges
- selection of PPE
- inspection and location of inspection and explosion doors (where applicable)
- identification of hazards and management of risks and maintenance problems
- fire-fighting equipment
- manufacturer recommendations and checklists
- relevant records and logs

Start-up includes:

- purge boiler furnace
- heat input
- warm-up reticulation system
- venting the boiler of air, where required
- steam traps and steam line purge system operations
- reticulation line pressure
- steam usage and supply

Maintenance includes:

- leaking steam pipe
- pressure gauge accuracy
- exposed electrical wiring
- defective illumination in the workplace
- leaking fuel pump gland
- leaks in high pressure feed line
- leaking gauge glass mounting
- leaking safety valve
- isolation procedures, hardware and equipment

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Faults include one or more of the following:

- abnormal operating conditions
- boiler tube failure
- feedwater supply and/or other major auxiliary loss
- wet steam
- high dissolved oxygen
- pH of water
- high conductivity
- actuator or valve mechanical or electrical fault/failure
- instrument failure
- steam leak

Diagnosed includes one or more of the following:

- senses, including:
  - audio
  - smell
  - touch
  - visual
- remote or local indicators and recorders
- computers and alarms, including:
  - visible
  - audible

Operating log includes:

- date and time of checking
- each check, examination and results
- printed and signed name of person who performed the checks
- date and time of any lockout or equipment malfunction
- results of tests on boiler or feedwater
- changes in operation

Valves and fittings include one or more of the following:

- safety valves
- gauge glasses
- main steam stop valve
- feedwater stop valve
- feed check valve
- blowdown valve
- steam side/line drain valves
- flame failure detection device
- water level controller

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- boiler steam pressure gauge

Monitored includes:

- water supply system
- checks of steam reticulation line pressure
- usage and supply of steam
- quality of steam
- combustion/heat source system and management
- feedwater system
- fuel system
- combustion air supply
- water level
- boiler steam pressure
- boiler and steam manifold valves (where fitted)
- soot blowers (where fitted)
- operation of control/safety devices, including control panels

Tested includes one or more of the following:

- response checks
- standby plant ‘cut in’ tests
- valve operating checks
- hydrostatic tests
- performance tests
- alarm and protection tests

Tests include one or more of the following:

- pH levels
- conductivity
- oxygen
- TDS
- hardness
- other contaminants

Chemicals include one or more of the following:

- oxygen scavenger
- feedwater additives
- other chemicals
- hardness
- condensate chemicals
- pH buffers

Handover includes:

- previous load requirements

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- maintenance issue, including equipment isolated for maintenance
- operational incidences
- read operating log
- general inspection of boiler to detect any defects
- accept responsibility of boiler
- noted equipment malfunctions
- required equipment tests

Emergencies include one or more of the following:

- tube failure
- loss of water level
- power failure
- inadequate housekeeping
- explosion
- fire
- bomb threat
- terrorism
- personal accidents
- chemical spills
- major steam leaks
- major water leaks and flooding
- natural disasters
- oil spills

Appropriate emergency response measures include one or more of the following:

- identification of emergency
- isolation of heat source
- selection and application of appropriate fire-fighting equipment and PPE
- notification of downstream users
- operation of boiler only when safe to do so
- notification of appropriate regulatory authorities, including Commonwealth, state, territory and boiler manufacturer

Shutdown includes:

- checks of water level
- cooling down process
- valve settings
- equipment isolation
- boiler pressure/vacuum
- fuel/heat source isolation in accordance with manufacturer recommendations

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- boiler post-purge

Storage mode includes:

- wet and dry storing
- open or closed position

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSABLIC001 Licence to operate a standard boiler.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMBLIC001 Licence to operate a standard boiler

Modification History

Release 1. Supersedes and is equivalent to MSABLIC001 Licence to operate a standard boiler.

Performance Evidence

Evidence of competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include demonstration of:

- following work instructions, SOPs and safe work practices
- complying with Commonwealth, state and territory work health and safety (WHS) legislation and regulations
- complying with Australian and industry standards, organisation workplace standards, policies and relevant codes of practice requirements at all times
- planning and preparing for work, including identifying potential hazards and implementing appropriate risk control measures
- identifying the type of standard boiler
- reading and interpreting maintenance records, operating logs and safety data sheets (SDS)
- conducting the appropriate pre-start up checks, including identifying all maintenance requirements and visual faults
- using appropriate tools, equipment and PPE in accordance with procedures
- completing all maintenance and rectification requirements in accordance with manufacturers' and workplace procedures, including recording/reporting requirements
- completing the start-up procedures and bringing the boiler online
- monitoring the boiler, including conducting relevant tests and activities and adjusting boiler water quality in accordance with procedures
- interpreting boiler operation tables and figures
- communicating handover of boiler status to appropriate personnel
- demonstrating emergency operating procedures
- identifying all boiler energy sources required to be isolated and made safe for maintenance, inspection and repairs
- applying boiler cleaning and storage techniques.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of PPE
- Commonwealth, state and territory WHS/OHS legislation and approved codes of practice relevant to standard boiler operation

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- Australian and industry standards relevant to standard boiler operation
- basic principles of heat transfer and thermodynamics in relation to boiler operations
- boiler steam equipment operating principles and operating methods
- types and characteristics of feedwater systems and treatment
- types and use of equipment and fittings for operation and maintenance of boilers
- function, purpose and operation of main steam stop valve
- boiler auxiliary equipment characteristics and capabilities
- essential fittings required where more than one boiler is installed (e.g. battery of boilers)
- processes for confirming operational status of a boiler
- workplace communication techniques and procedures
- responsibilities for checking and testing boilers
- location and inspection procedures and techniques for inspection and explosion doors
- steam and boiler hazards for cold start and handover
- hierarchy of risk control
- type and limitations of corrective action and/or adjustments that can be made in response to routine boiler operation problems and emergencies
- various harmful energy sources in boiler operation and the means to effectively isolate these energy sources and make them safe
- modes of boiler storage and procedures for storing boiler in open or closed condition
- SDS and safe chemical handling and storage methods for boiler operation and cleaning
- procedures for cleaning boilers internally and externally, as required
- procedures for recording, reporting and maintenance of workplace records and information.

Assessment Conditions

- Assessments must be conducted by an assessor accredited for this high risk work (HRW) licence class in the Commonwealth/state/territory where the licence will be obtained (i.e. an assessor authorised by a Commonwealth/state/territory WHS/OHS regulator).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and all assessments must be conducted in the English language.
- Where possible, assessment of performance should be undertaken in the workplace and/or under realistic workplace conditions that typically reflect:
  - the use of full-scale equipment
  - performing tasks/activities within timelines that would be expected in a workplace
  - standard and authorised work practices, safety requirements and environmental constraints.
- Where this is not possible or where personal safety, plant operation or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects 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.

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- Accredited assessors are responsible for ensuring that candidates have access to all tools, equipment, PPE, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMBLIC002 Licence to operate an advanced boiler

Modification History

Release 1. Supersedes and is equivalent to MSABLIC002 Licence to operate an advanced boiler

Application

This unit specifies the outcomes required to operate an advanced boiler safely. This includes boiler start-up, handover, monitoring, shutdown and storage of a boiler.

This unit also covers the preparation for inspection procedures as specified in manufacturer recommendations, identification of maintenance requirements and relevant risk control measures.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations, High Risk Work, and meets Commonwealth, state and territory high risk work licensing requirements. Any alteration to the unit content or outcomes would result in a unit that is not acceptable to WHS/Occupational Health and Safety (OHS) regulators for the purpose of licensing.

Pre-requisite Unit

Nil

Competency Field

Unit Sector

Boiler operation (licensed)

Elements and 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	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS)

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			requirements at all times
		1.3	Identify potential workplace hazards and appropriate risk control measures consistent with appropriate standards to ensure the safety of personnel and equipment
		1.4	Locate and review appropriate records to prepare for boiler operation
		1.5	Identify the type of boiler with associated equipment and plan boiler operations according to procedures
		1.6	Identify appropriate personal protective equipment (PPE) in accordance with SOPs
		1.7	Identify suitable communication methods and confirm with appropriate personnel
2	**Start up boiler**	2.1	Apply risk prevention and risk control measures to the work area according to procedures
		2.2	Select communication equipment and inspect for serviceability
		2.3	Select all necessary equipment and inspect for operational effectiveness according to procedures, including establishing water level
		2.4	Check boiler and associated equipment visually for any damage or defects and report and record any found according to procedures with appropriate action taken
		2.5	Vent boiler to atmosphere prior to start-up, as required
		2.6	Carry out pre-start up checks on the boiler and bring the boiler and associated equipment online safely according to procedures
		2.7	Start up boiler according to procedures
		2.8	Identify maintenance requirements and any visual faults and report according to procedures
		2.9	Confirm, complete and log all maintenance and/or repairs and associated isolations and make the equipment serviceable

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3	**Monitor boiler operation**	3.1	Diagnose operating status of the boiler and associated equipment
		3.2	Maintain operating log clearly and accurately according to procedures
		3.3	Monitor boiler, valves, fittings, pressure gauges combustion management systems, air heaters, superheaters and economisers (where fitted) according to procedures
		3.4	Blow boiler water level gauges through both steam and water sides
		3.5	Test standby plant and equipment according to procedures
		3.6	Conduct boiler water quality tests, where required, and record the results according to procedures
		3.7	Adjust boiler water chemicals after tests, where appropriate and required, according to procedures and notify downstream users, if necessary
		3.8	Activate the automatic blowdown and, where required, boiler is blown down to adjust total dissolved solids (TDS) levels to recommendations
		3.9	Communicate handover information regarding boiler status and associated equipment and operation clearly to relevant personnel according to procedures
		3.10	Respond immediately to any boiler emergency in accordance with procedures
4	**Shut down boiler**	4.1	Shut down the boiler and associated equipment for inspection according to procedures, as required
		4.2	Identify maintenance requirements and report any visual faults according to procedures
		4.3	Clean boiler and associated equipment internally and externally to manufacturer recommendations and procedures, where required
		4.4	Complete isolations associated with in-service

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			maintenance according to procedures
		4.5	Complete boiler operating log for shutdown
5	**Store boiler in shutdown mode**	5.1	Identify storage time and condition of storage, where required
		5.2	Store boiler and associated equipment in safe condition for access in accordance with manufacturer recommendations and procedures
		5.3	Test stored boiler water and chemicals, where required, and handle in accordance with procedures, where storage is for extended periods

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.

Boiler includes: Boilers covered by this unit are standard boilers and advanced boilers, including boilers defined in *AS 2593:2004 Safety management and supervision systems* and *AS 3873:2001 Pressure equipment – Operation and maintenance* and typically have a modulating combustion air supply and heat source.

Standard boiler includes:

- vessel or an arrangement of vessels and interconnecting parts in which steam and vapour is generated or in which water or other liquid is heated above that of the atmospheric pressure by the application of:
  - fire
  - the products of combustion

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- electrical power
- similar high temperature means

- fixed and modulating combustion controls, fixed and modulated air supply, a single fuel source and will have:
  - boiler piping
  - supports
  - mountings
  - valves
  - gauges
  - fittings
  - controls
  - boiler settings and associated equipment

Advanced boiler includes:

- vessel or an arrangement of vessels and interconnecting parts in which steam and vapour is generated or in which water or other liquid is heated above that of the atmospheric pressure by the application of:
  - fire
  - the products of combustion
  - electrical power
  - similar high temperature means
- fixed and modulating combustion controls, fixed and modulated air supply, multiple fuel sources, pre-heaters, superheaters and economisers and will have:
  - boiler piping
  - supports
  - mountings
  - valves
  - gauges
  - fittings
  - controls
  - boiler settings and directly associated equipment

Hazards include one or more of the following:

- asbestos lagging
- chemical hazards
- thermal hazards
- manual handling hazards
- machinery guard requirements
- hot exposed steam pipe
- leakage of steam

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- leakage of fuel
- odour of gas
- fumes from a liquid chemical spill
- faulty/broken ladder or hand rail
- working at heights
- flammable liquids
- fire and explosion
- electrical hazards
- work area, including:
  - illumination
  - excessive noise from machinery
  - spillage of oil
  - rubbish and combustibles
  - obstruction

Risk control methods include:

Risk control methods refer to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls.

It includes the application of the hierarchy of control:

- elimination
- substitution
- isolation
- engineering controls
- administrative controls
- personal protective equipment (PPE)

PPE includes one or more of the following:

- thermally insulated gloves
- hard hat protection
- ear protection (muffs or plugs)
- chemical resistant gloves and apron
- respiratory devices
- eye protection
- working protective gloves
- whole body fire-resistant clothing

Appropriate standards include one or more of the following:

- legislation
- codes of practice
- manufacturer specifications
- Australian Standards

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- technical standards (International)
- industry standards (where applicable)

Procedures include one or more of the following:

- manufacturer guidelines (e.g. instructions, specifications or checklists)
- industry operating procedures
- workplace procedures (e.g. work instructions, operating procedures or checklists)

Equipment includes one or more of the following:

- gas monitoring equipment
- water testing equipment
- fire-fighting equipment
- workplace first aid equipment
- work platform and associated gear, including walkways

Communication methods include one or more of the following:

- verbal and non-verbal language
- written instructions
- signage
- hand signals
- listening
- questioning to confirm understanding
- appropriate worksite protocol

Appropriate personnel includes one or more of the following:

- production workers
- maintenance workers
- supervisors and managers
- other boiler operators
- suppliers
- colleagues

Records include one or more of the following:

- operating log books
- maintenance records
- records of faults and potential faults
- isolation procedures
- safe operating procedures
- daily operating inspections
- repairs carried out according to manufacturer recommendations and operating procedures
- workplace record keeping requirements

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	• details of any daily or periodic maintenance work • details of yearly programmed or additional maintenance work
Risk control measures include one or more of the following:	• barricades and controls • machine guarding • fall prevention • pedestrian controls • adequate illumination • noise controls • signage • PPE
Communication equipment includes one or more of the following:	• two-way radios • mobile phones • intercoms • landline telephones • pagers • satellite phones • computers
Pre-start up checks include:	• testing warning lamps or visual warning indicators • control panel checks • checks of feedwater supply system • fuel supply/heat source systems • operation and position of boiler valves • combustion air supply system • boiler water level • essential fittings and gauges • selection of personal protective equipment • inspection and location of inspection and explosion doors (where applicable) • identification of hazards and management of risks and maintenance problems • fire-fighting equipment • manufacturer recommendations and checklists • relevant records and logs
Associated equipment includes one or more of	• multiple fuel sources • pre-heater • superheater

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the following:

- economiser
- superheater safety valves
- economiser relief valves
- air heater
- feedwater heater
- attemperator
- main steam stop valve

Start-up includes:

- purge boiler furnace
- heat input
- warm-up reticulation system
- venting the boiler of air, as required
- steam traps and steam line purge system operations
- reticulation line pressure
- steam usage and supply
- superheater
- air heater
- feedwater heater
- economiser

Maintenance includes:

- leaking steam pipe
- pressure gauge accuracy
- exposed electrical wiring
- defective illumination in the workplace
- leaking fuel pump gland
- leaks in high pressure feed line
- leaking gauge glass mounting
- leaking safety valve
- isolation procedures, hardware and equipment

Faults include one or more of the following:

- abnormal operating conditions
- boiler tube failure
- feedwater supply and/or other major auxiliary loss
- wet steam
- high dissolved oxygen
- pH of water
- high conductivity
- actuator or valve mechanical or electrical fault/failure
- instrument failure
- steam leak

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- associated equipment failure

Diagnosed includes one or more of the following:

- senses, including:
  - audio
  - smell
  - touch
  - visual
- remote or local indicators and recorders
- computers and alarms, including:
  - visible
  - audible

Operating log includes:

- date and time of checking
- each check, examination and results
- printed and signed name of person who performed the checks
- date and time of any lockout or equipment malfunction
- results of tests on boiler or feedwater
- changes in operation

Valves and fittings include one or more of the following:

- safety valves
- gauge glasses
- main steam stop valve
- feedwater stop valve
- feed check valve
- blowdown valve
- steam side/line drain valves
- flame failure detection device
- water level controller
- boiler steam pressure gauge
- economiser relief valve
- superheater safety valve

Monitored includes:

- water supply system
- checks of steam reticulation line pressure
- usage and supply of steam
- quality of steam
- combustion/heat source system and management
- feedwater system and condensate returns
- fuel system

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- combustion air supply
- water level
- boiler steam pressure
- boiler and steam manifold valves
- soot blowers
- operation of control/safety devices, including control panels

Tested includes one or more of the following:

- response checks
- standby plant ‘cut in’ tests
- valve operating checks
- hydrostatic tests
- performance tests
- alarm and protection tests

Tests include one or more of the following:

- pH levels
- conductivity
- oxygen
- TDS
- hardness
- other contaminants

Chemicals include one or more of the following:

- oxygen scavenger
- feedwater additives
- other chemicals
- hardness
- condensate chemicals
- pH buffers

Handover includes:

- previous load requirements
- maintenance issue, including equipment isolated for maintenance
- operational incidences
- read operating log
- general inspection of boiler to detect any defects
- accept responsibility of boiler
- noted equipment malfunctions
- required equipment tests

Emergencies include one

- tube failure

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or more of the following:

- loss of water level
- power failures
- inadequate housekeeping
- explosion
- fire
- bomb threat
- terrorism
- personal accidents
- chemical spills
- major steam leaks
- major water leaks and flooding
- natural disasters
- oil spills

Appropriate emergency response measures include one or more of the following:

- identification of emergency
- isolation of heat source
- selection and application of appropriate fire-fighting equipment and PPE
- notification of downstream users
- operation of boiler only when safe to do so
- notification of appropriate regulatory authorities, including Commonwealth, state, territory and boiler manufacturer

Shutdown includes:

- checks of water level
- cooling down process
- valve settings
- equipment isolation
- boiler pressure/vacuum
- fuel/heat source isolation in accordance with manufacturer recommendations
- boiler post-purge

Storage mode includes:

- wet and dry storing
- open or closed position

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSABLIC002 Licence to operate an advanced boiler

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMBLIC002 Licence to operate an advanced boiler

Modification History

Release 1. Supersedes and is equivalent to MSABLIC002 Licence to operate an advanced boiler

Performance Evidence

Evidence of competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include demonstration of:

- following work instructions, SOPs and safe work practices
- complying with Commonwealth, state and territory work, health and safety (WHS) legislation and regulations
- complying with Australian and industry standards, organisation workplace standards, policies, relevant codes of practice requirements at all times
- planning and preparing for work, including identifying potential hazards and implementing appropriate risk control measures
- identifying the type of standard or advanced boiler and associated equipment
- reading and interpreting maintenance records, operating logs and safety data sheets (SDS)
- conducting the appropriate pre-start up checks, including identifying all maintenance requirements and visual faults
- using appropriate tools, equipment and PPE in accordance with procedures
- completing all maintenance and rectification requirements in accordance with manufacturers' and workplace procedures, including recording/reporting requirements
- completing the start-up procedures and bringing the boiler online
- monitoring the boiler and associated equipment, including conducting relevant tests and activities and adjusting boiler water quality in accordance with procedures
- interpreting advanced boiler operation tables and figures
- communicating handover of boiler status and associated equipment to appropriate personnel
- demonstrating emergency operating procedures
- identifying all boiler energy sources required to be isolated and made safe for maintenance, inspection and repairs
- applying advanced boiler cleaning and storage techniques.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of PPE

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- Commonwealth, state and territory WHS/OHS legislation and approved codes of practice relevant to standard and advanced boiler operation
- Australian and industry standards relevant to standard and advanced boiler operation
- basic principles of heat transfer and thermodynamics in relation to standard and advanced boiler operation
- standard and advanced boiler operation steam equipment operating principles and operating methods
- types and characteristics of multiple fuel systems for standard and advanced boilers
- types and characteristics of feedwater systems and treatment, including de-aerator
- types and use of equipment and fittings for operation and maintenance of boilers
- function, purpose and operation of the following:
  - pre-heater
  - superheater
  - economiser
  - air heater
  - feedwater heater
  - attemperator
  - superheater safety valves
  - economiser relief valves
  - main steam stop valve
- standard and advanced boiler and auxiliary equipment characteristics and capabilities
- essential fittings required where more than one boiler is installed (e.g. battery of boilers)
- processes for confirming operational status of a boiler
- workplace communication techniques and procedures
- responsibilities for checking and testing advanced boilers
- location and inspection procedures and techniques for inspection and explosion doors
- steam and boiler hazards for cold start and handover
- hierarchy of risk control
- type and limitations of corrective action and/or adjustments that can be made in response to routine boiler operation problems and emergencies
- various harmful energy sources in standard and advanced boiler operation and the means to effectively isolate these energy sources and make them safe with particular consideration to advanced boilers
- modes of standard and advanced boiler storage and procedures for storing boiler in open or closed condition
- SDS and safe chemical handling and storage methods for boiler operation and cleaning
- procedures for cleaning boilers internally and externally, where required
- procedures for recording, reporting and maintenance of workplace records and information.

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Assessment Conditions

- Assessments must be conducted by an assessor accredited for this high risk work (HRW) licence class in the Commonwealth/state/territory where the licence will be obtained (i.e. an assessor authorised by a Commonwealth/state/territory WHS/OHS regulator).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and all assessments must be conducted in the English language.
- Where possible, assessment of performance should be undertaken in the workplace and/or under realistic workplace conditions that typically reflect:
  - the use of full-scale equipment
  - performing tasks/activities within timelines that would be expected in a workplace
  - standard and authorised work practices, safety requirements and environmental constraints.
- Where this is not possible or where personal safety, plant operation or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects 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.
- Accredited assessors are responsible for ensuring that candidates have access to all tools, equipment, PPE, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMENV172 Identify and minimise environmental hazards

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP172A Identify and minimise environmental hazards

Application

This unit of competency covers the skills and knowledge required to identify activities and/or materials that present an environmental threat and to take the appropriate action according to procedures.

This unit of competency applies to all personnel who are required to work within environmental regulatory requirements which are reflected in the organisation's policies and procedures.

It applies to an individual working alone or as part of a team or group and working in liaison with other team members and supervisors.

This unit of competency applies to all plants and areas of operation.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	Identify environmental threats	1.1	Recognise the type and severity of environmental threat posed by the materials and processes used for own work
		1.2	Identify ways materials used may enter the environment
		1.3	Identify sensitive features of the local environment and their impact on work practice and procedures
		1.4	Recognise abnormal or unacceptable emission levels
2	Identify workplace procedures and policies to minimise environmental threats	2.1	Identify workplace policy for environmental protection
		2.2	Identify environmental protection measures within standard operating procedures (SOPs) relevant to work
		2.3	State contact procedures for personnel involved in environmental response teams
3	Follow procedures to minimise environmental threats	3.1	Implement environmental protection measures in relevant procedures
		3.2	Report abnormal emissions/environmental issues to appropriate personnel
		3.3	Apply containment procedures in accordance with SOPs, where appropriate
		3.4	Implement waste management procedures and practices
		3.5	Follow safety procedures and use personal protective equipment (PPE)

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.

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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:

- emergency procedures
- work instructions
- SOPs
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include:

- personal protective equipment (PPE)
- spill kits

Emissions

Abnormal or unacceptable emission levels include one of more of the following:

- excessive noise
- light
- odours
- gases/vapours
- visible smoke/vapour
- liquid and solids

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- particulates
- fumes

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP172A Identify and minimise environmental hazards

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV172 Identify and minimise environmental hazards

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP172A Identify and minimise environmental hazards

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 must include the ability to:

- recognise and report environmental threats
- communicate using in-plant reporting systems (verbal, electronic or written)
- select and use containment equipment
- select and use personal protective equipment (PPE).

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - environmental protection and reporting requirements
  - safety, emergency and hazard controls
- type and severity of environmental threats, including contribution to climate change and other macro threats that can arise from materials and work processes used
- environmental protection measures required to minimise threats
- types of emissions relevant to job role and permissible levels.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems

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  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMENV272 Participate in environmentally sustainable work practices

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

Application

This unit describes the skills and knowledge required to comply with environmental regulations, identify environment issues and minimise the risks of negative impact on work and carry out improvements in own work area.

This unit applies to operators and team members who are required to follow procedures to work in an environmentally sustainable manner.

This unit applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office and warehouse. This unit will need to be contextualised for the industry sector, organisation and section.

This unit applies to an individual working alone or as part of a team and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

HSE

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify current resource use and environmental issues	1.1 Identify workplace environmental and resource efficiency issues 1.2 Identify resources used in own work role 1.3 Confirm current usage of resources
2. Comply with environmental regulations	2.1 Read and follow environmental policies and procedures to ensure compliance with federal, state/territory and local government laws, by-laws, regulations and mandated codes of practice, and codes and standards that the organisation applies voluntarily 2.2 Ask questions and seek clarification relating to environmental work requirements 2.3 Identify incidents, including breaches or potential breaches of environmental regulations and occurrences outside of standard procedures and report to appropriate personnel 2.4 Report environmental incidents using workplace forms and procedures
3. Seek opportunities to improve environmental practices and resource efficiency	3.1 Follow workplace procedures to improve environmental practices and resource efficiency 3.2 Make suggestions for improvements to environmental workplace practices and work plans

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

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Assessment Requirements for MSMENV272 Participate in environmentally sustainable work practices

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- followed environmental policies and identified potential breaches of environmental regulations and suggested improvements within the limit of own authority.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- environmental sustainability issues relevant to organisation
- resource use and impact of inefficiencies associated with own work role
- environmental and resource efficiency policies and procedures for own work role
- environmental regulations and guidelines and their impact on own work role
- the environmental issues, hazards and risks associated with own work role
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - environmental regulations, guidelines and procedures
  - workplace incident reporting procedures and forms.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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MSMENV472 Implement and monitor environmentally sustainable work practices

Modification History

Release 1. Supersedes and is equivalent to MSAENV472B Implement and monitor environmentally sustainable work practices

Application

This unit of competency covers the skills and knowledge required to effectively analyse the workplace in relation to environmentally sustainable work practices, and to implement improvements and monitor their effectiveness.

This unit of competency applies to those who have responsibility for a specific area of work or who lead a work group or team. It addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools.

It includes identifying areas for improvement, developing plans to make improvements, and implementing and monitoring improvements in environmental performance.

This unit of competency applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office and warehouse. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

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Competency Field

HSE

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Investigate current practices in relation to resource usage**	1.1	Identify environmental regulations applying to the enterprise
		1.2	Assess procedures for assessing compliance with environmental regulations
		1.3	Collect information on environmental and resource efficiency systems and procedures and provide to the work group, as required
		1.4	Measure and record current resource usage by members of the work group
		1.5	Analyse and record current purchasing strategies
		1.6	Analyse current work processes to access information and data, and assist in identifying areas for improvement
2	**Set targets for improvements**	2.1	Seek input from stakeholders, key personnel and specialists
		2.2	Access external sources of information and data as required
		2.3	Evaluate alternative solutions to workplace environmental issues
		2.4	Set efficiency targets
3	**Implement performance**	3.1	Source and use techniques/tools to assist in achieving targets

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	improvement strategies	3.2	Apply continuous improvement strategies to own work area of responsibility, and communicate ideas and possible solutions to the work group and management
		3.3	Integrate environmental and resource efficiency improvement plans for own work group with other operational activities and implement them
		3.4	Seek suggestions and ideas about environmental and resource efficiency management from stakeholders and act upon them where appropriate
		3.5	Implement costing strategies to fully value environmental assets
4	**Monitor performance**	4.1	Document outcomes and communicate reports on targets to key personnel and stakeholders
		4.2	Evaluate strategies and environmental performance, including breaches or potential breaches of regulations and occurrences outside of standard procedure which may lead to lower environmental performance
		4.3	Set new targets and investigate and apply new tools and strategies
		4.4	Promote successful strategies and reward participants where possible

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.

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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
- *ISO 14001:2015 Environmental management systems*

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)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV472 Implement and monitor environmentally sustainable work practices

Modification History

Release 1. Supersedes and is equivalent to MSAENV472B Implement and monitor environmentally sustainable work 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 and must include the ability to:

- investigate/analyse resource usage
- evaluate improvement alternatives and set targets
- implement improvements within the limit of own authority
- monitor the performance of improvements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant environmental and resource efficiency issues, specific to industry practices, including:
  - contribution to climate change and other macro threats that can arise from materials and work processes used
  - regulated environmental issues
  - issues relevant to licencing conditions
- best practice environmental approaches relevant to own area of responsibility
- methods for measuring and calculating resource usage.

Assessment Conditions

- 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 occur over a range of situations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - will typically include the use of appropriate tools, equipment and documents

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    - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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

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MSMENV672 Develop workplace policy and procedures for environmental sustainability

Modification History

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

Application

This unit of competency covers the skills and knowledge required to develop and implement a workplace sustainability policy, including the modification of the policy to suit changed circumstances.

This unit of competency applies to team leaders/supervisors/managers who are required to develop approaches to environmental sustainability within workplaces, including the development and implementation of policy.

It includes communicating with relevant stakeholders, developing and monitoring sustainability policies and reviewing and improving sustainability policies.

This unit of competency applies to all sectors of the manufacturing industry. It may also be applied to all sections of an organisation, including the office and warehouse. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

HSE

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Develop workplace sustainability policy	1.1	Define the scope of sustainability policy
		1.2	Identify and consult with stakeholders during the policy development process
		1.3	Review the environmental sustainability strategies relevant to all stages of work covered by the policy
		1.4	Make recommendations for policy options based on likely effectiveness, timeframes and cost
		1.5	Develop policy that reflects the organisation's commitment to sustainability as an integral part of the business planning, and as a business opportunity
		1.6	Agree upon appropriate methods of implementation
2	Communicate the policy	2.1	Promote the policy, including its expected outcome to key stakeholders
		2.2	Inform those involved in implementing the policy as to outcomes expected, activities to be undertaken and responsibilities assigned
3	Implement the policy	3.1	Develop and communicate procedures to help implement the policy
		3.2	Employ strategies for implementation of policy in resource efficiency
		3.3	Establish recording systems for tracking changes in sustainability approaches and assign responsibilities
4	Review policy	4.1	Record outcomes and provide feedback to key personnel

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implementation		and stakeholders
	4.2	Investigate success or otherwise of policy
	4.3	Monitor records to identify trends that may require remedial action to implemented policy and procedures
	4.4	Modify policy and or procedures as required to ensure improvements are made

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
- *ISO 14001:2015 Environmental management systems*

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)

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- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV672 Develop workplace policy and procedures for environmental sustainability

Modification History

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

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 must include the ability to:

- scope and develop an integrated sustainability policy and procedure within an enterprise
- raise awareness among stakeholders and those involved in implementing the policy of expected outcomes
- develop a workable implementation strategy
- ensure policy implementation is monitored, reviewed and modified where

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant policy development and implementation processes and practices
- principles, practices and available tools and techniques of sustainability management relevant to the particular industry context.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.

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- Knowledge evidence may be collected concurrently with performance evidence 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

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MSMOPS100 Use equipment

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS100A Use equipment

Application

This unit of competency covers the skills and knowledge required to use an item of equipment which is operated with limited application of knowledge.

This unit of competency applies to all persons who have the responsibility for using equipment where they are not required to have any significant understanding of the equipment or the process. Where greater levels of understanding and interaction are required, then the appropriate *MSMOPS2# series* operations unit of competency should be used.

In a typical situation the operator may be using, for example, a packaged chilled water refrigeration unit to supply chilled water to the plant. The operator uses simple controls and responds to fault alarms built into the equipment. Even though the equipment may be very sophisticated (e.g. using high-speed compressors and computerised monitoring and control equipment) the operator interface is relatively simple. The operator is expected to simply regard this equipment as a black box – they may know what it does, but little detail on how it does it.

This unit of competency has been written to apply to fluids as well as solids and may be applied wherever ‘black box’ equipment is used.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Follow workplace procedures	1.1	Find out what is required for the job
		1.2	Identify and follow appropriate procedures
		1.3	Complete all reporting as required.
		1.4	Recognise and report hazards and anything unusual
2	Monitor and use the equipment/ process	2.1	Turn the equipment on and off as required by procedure
		2.2	Monitor equipment throughout the job using measurements, readings and senses as appropriate.
		2.3	Recognise routine problems
		2.4	Take appropriate corrective action

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.

Procedures All operations must be performed in accordance with relevant

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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)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment

Equipment includes one or more of the following:

- compressors (packaged plant)
- refrigeration (packaged plant)
- fans
- blowers
- portable generators
- air conditioning units
- other equipment with similar operating requirements

Hazards

Hazards include one or more of the following:

- slip/trip hazards
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions, swarf and scrap
- extreme weather
- other hazards that might arise

Hazard controls

Hazard controls include one or more of the following:

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- use of personal protective equipment (PPE)
- ensuring equipment is in safe condition
- reporting potential hazards to appropriate personnel

Routine problems

Routine problems must be reported and corrective action taken according to relevant procedures.

Routine problems include one or more of the following:

- deviations from standard/desired conditions
- alarms

Corrective actions

Corrective actions include one or more of the following:

- reporting to an appropriate person
- taking action specified in the procedure

Appropriate personnel

Appropriate personnel include one or more of the following:

- supervisor
- more senior operator
- other designated personnel

Reporting methods

Reporting methods include one or more of the following:

- verbal
- written

Using equipment

Using equipment includes monitoring, adjusting/changing the equipment as required, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Unit Mapping Information

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS100 Use equipment

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS100A Use equipment

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:

- recognise and control hazards
- monitor key variables as relevant to the equipment, including one or more of:
  - equipment production outputs
  - equipment operating conditions
- recognise deviations and/or abnormal operating conditions and take specified action/alert the appropriate individuals
- identify routine problems and report or take corrective action, where appropriate.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- hazards and hazard controls specific to the work area
- correct methods of operating and controlling the equipment
- process parameters, limits and alarms (e.g. temperature, pressure, flow and pH) to the extent relevant to operating this equipment

routine problems that may arise in the job/work environment and corrective action appropriate to the problem cause.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include the use of an appropriate industrial item of equipment requiring demonstration of operation, start and stop procedures and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.

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- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMOPS102 Perform tasks to support production

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS102A Perform tasks to support production

Application

This unit of competency covers the skills and knowledge required to perform tasks in support of the production process working under close supervision.

This competency applies to personnel who are not operating equipment but are making products or contributing to the production process through predominantly manual tasks. These tasks might be referred to as 'fetch and carry' type tasks.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate. It might also apply to a more experienced operator working outside their field of expertise and under close supervision.

The competency applies to all sectors of the manufacturing industry.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Perform general duties and tasks**	1.1	Perform tasks as directed
		1.2	Ask questions of appropriate person to confirm unusual requirements
		1.3	Organise relevant equipment and tools and check to confirm good working condition
		1.4	Identify hazards and follow specified hazard controls
		1.5	Select and use personal protective equipment (PPE), where needed, in accordance with organisation procedures
2	**Transfer, remove or supply materials/ product where required**	2.1	Organise, confirm and record requests and tasks according to specified procedures
		2.2	Identify and organise appropriate equipment for transferring material where relevant
		2.3	Load and unload material using suitable aids
		2.4	Transfer/move material to the correct destination in a safe manner
3	**Perform cleaning duties associated with role**	3.1	Clarify cleaning duties
		3.2	Determine, prepare and mix appropriate cleaning equipment and chemicals/detergents for specific tasks
		3.3	Follow procedures for handling and storage of cleaning liquids in accordance with organisation or manufacturer specifications
		3.4	Clean as required
4	**Complete duties and reporting requirements**	4.1	Identify routine problems and take corrective actions, as required
		4.2	Complete reporting requirements in accordance with organisation procedures

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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.

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include one or more of the following:

- cleaning equipment
- detergents and other chemicals
- simple hand and power tools
- hand trolleys pallet trucks

Note that production equipment and complex equipment, such as forklifts, overhead cranes or front-end loaders, are not covered by this unit.

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Loading and unloading aids

Loading and unloading aids include equipment other than regulated load shifting equipment.

Loading and unloading aids must conform to materials handling requirements, safe work practices and manual handling techniques and workplace procedures.

Hazards

Hazards include one or more of the following:

- manual handling injuries
- slip/trip hazards
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be reported and corrective action taken according to relevant procedures.

Routine problems include one or more of the following:

- difficult access to the work area
- awkward work spaces
- tool failures or breakages
- defective equipment
- incorrect or defective materials
- wrong quantities of materials

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Corrective actions	Corrective actions include one or more of: • reporting to an appropriate person • taking action specified in the procedure
Appropriate personnel	Appropriate personnel includes one or more of: • supervisor • more senior operator • other designated personnel

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS102A Perform tasks to support production

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS102 Perform tasks to support production

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS102A Perform tasks to support production

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 must include the ability to:

- follow procedures to work safely, including:
  - selecting and using personal protective equipment (PPE)
  - locating and transporting materials and products
  - selecting and using equipment and tools
  - undertaking basic tasks to meet standards
  - identifying hazards and applying control measures
- clarify and confirm tasks and procedures
- recognise labels and signs
- identify routine problems and take corrective action, where appropriate
- complete forms and documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including:
- safety, emergency and hazard control
- relevant organisation standard operating procedures (SOPs)
- hazards that may arise in the job/work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- types and application of PPE relevant to job/work environment
- safe handling of materials relevant to job
- types and application of equipment and criteria for determining good working condition
- routine problems that may arise in the job/work environment and corrective action appropriate to the problem cause
- reporting procedures.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- 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

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MSMOPS200 Operate equipment

Modification History

Release 2. Equivalent. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMOPS200A Operate equipment.

Application

This unit describes the skills and knowledge required to operate a single unit operation/plant item/item of equipment. It is for items of equipment/plant items/unit operations which are not otherwise covered in this Training Package and may be organisation specific.

This unit applies to a person who has the responsibility for undertaking the routine operation of an individual unit of equipment or a plant item. Typically, the person will be an 'outside' or 'field' operator; however, the unit may also be applied to 'panel' or 'control room' operators.

This unit applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Operations

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 work	1.1 Receive and give shift handover 1.2 Identify and clarify work requirements 1.3 Identify and control hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Coordinate with appropriate personnel 1.5 Check for recent work undertaken on plant item 1.6 Note any outstanding and/or incomplete work 1.7 Check operational status of equipment or plant item
2. Operate equipment or plant item	2.1 Identify the types of equipment or plant item and its duty 2.2 Complete routine checks, logs and paperwork taking appropriate action on unexpected readings 2.3 Adjust equipment or plant item as required, appropriate to type of equipment or plant item and duty 2.4 Change rate, grade or specification smoothly as required 2.5 Charge or discharge equipment or plant item as required
3. Recognise and take appropriate action on abnormal situations	3.1 Monitor equipment or plant item frequently and critically throughout shift using measured or indicated data and senses as appropriate 3.2 Identify impacts of any changes upstream and downstream 3.3 Identify impacts of upstream and/or downstream changes on the equipment or plant item 3.4 Identify situations which may require action 3.5 Resolve routine problems 3.6 Take appropriate actions on other abnormal situations to make safe and have the situation resolved
4. Isolate and de-isolate equipment or plant item in accordance with procedures	4.1 Complete any required pre-start checks 4.2 Start up, shut down and changeover equipment or plant item according to the equipment or plant type and duty in liaison with other personnel 4.3 Isolate equipment or plant item 4.4 Make equipment or plant item safe for required work 4.5 Check equipment or plant item is ready to be returned to service 4.6 Prepare equipment or plant item for return to service

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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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMOPS200A Operate equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS200 Operate equipment

Modification History

Release 2. Equivalent. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMOPS200A Operate equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- checked, operated and monitored the output of at least 1 of the following:
  - single unit operation
  - plant item
  - item of equipment
- identified routine problems and applied known solutions.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- hazards that may arise in the job and work environment
- principles of operation of equipment or plant, including:
  - impact of type and duty
  - potential effects of variations in raw materials and equipment operation in relation to quality of product
  - factors which may affect product quality or production output and appropriate remedies
- reasons for checking process control panels and reporting readings which do not conform to the work instructions.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - equipment or plant item and start up, operation and shut down procedures
  - regulations, guidelines and procedures

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    - workplace hazard reporting procedures and forms
- Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.
-

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMOPS212 Use organisation computers or data systems

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS212A Use organisation computers or data systems

Application

This unit of competency covers the skills and knowledge required to use organisation computers or data systems in order to work effectively.

The operator will be required to select correct programs, save and retrieve data, and produce documents and spreadsheets relevant to operational or administrative functions within the organisation.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Identify**	1.1	Identify data and information available from the system

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	applications of computer or data system for work role		and its application to work role
		1.2	Identify data from work role which needs to be entered in the system
2	**Use the computer or data system**	2.1	Adjust workstation equipment to meet ergonomic requirements and use appropriate posture
		2.2	Log on according to procedures
		2.3	Navigate system
		2.4	Input data or make changes as required
		2.5	Check entered or edited data is correct
		2.6	Access required data/information
		2.7	Output data as required
		2.8	Apply system/security procedures
		2.9	Use 'Help' as needed
3	**Save file and exit system**	3.1	Identify the need to save data and, if required, save and store data in appropriate directory or folder
		3.2	Close file and/or exit applications programs without loss of data
		3.3	Back-up data if required in accordance with procedures
4	**Respond to routine problems with the system**	4.1	Recognise routine problems that occur during the operation
		4.2	Identify and take action on causes of routine problems
		4.3	Log problems as required
		4.4	Identify non-routine process and quality problems and take appropriate action

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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)
- privacy and intellectual property (IP)
- 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:

- organisation procedures relevant to data systems, data security, record keeping, privacy, internet usage and IP
- manufacturers' manuals
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the organisation

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Computers or data systems

Computers or data systems are used for one or more of the following:

- electronic documents (typically Word, Excel, email and similar)
- safety, safety data and injury reporting
- orders, purchasing, stock levels and scheduling
- stock control, stores, warehousing and logistics
- materials hazards, labelling, materials identification and material safety data sheets (MSDSs)
- batch data, schedules, production planning and operations planning
- product quality, statistical control, production trends and quality control
- maintenance, maintenance planning, procedures and spare parts

Equipment

Equipment includes one or more of the following:

- computers and stationary terminals/kiosks (stand alone and/or networked)
- mobile terminals and handheld devices
- smartphones and tablets
- printers
- mouse and keyboard
- facsimile equipment
- onboard terminals
- scanners
- bar coders

Software applications

Software applications include one or more of the following:

- email
- internet or intranet
- word processing, database and/or spreadsheet programs
- company/process-specific software

Documents

Documents include one or more of the following:

- work orders
- work instructions/SOPs
- email
- faxes
- memos
- tables
- standard letters

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- standard reports

Hazards

Hazards include one or more of the following:

- ergonomics and posture
- repetition strain injuries
- glare from monitor screens
- damaged cables or connections
- strains or injuries moving computer equipment
- other hazards that might arise in the job/work environment

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of:

- software problems, such as unable to access file, find correct page, send mail or input data
- loose or disconnected cables
- 'frozen' screens
- faulty monitors
- keyboard problems

Known solutions are drawn from one or more of:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to relevant procedures.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS212A Use organisation computers or data systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS212 Use organisation computers or data systems

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS212A Use organisation computers or data 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 and must include the ability to:

- use computers or data systems to locate and access information and/or data to meet job requirements
- edit information and/or input data electronically using one or more of:
  - keyboard
  - mouse
  - stylus
  - touchscreen
- check that edits/data entry are accurate and complete
- locate files (in file directory) or generate reports (within software) relevant to job
- apply procedures, as required, for:
  - log in/log out (and password protection)
  - back-up
  - security (e.g. anti-virus)
  - intellectual property (IP)/security
- apply known solutions to routine problems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - data systems and data security
  - record keeping
  - privacy
  - IP
  - use of internet
  - safety, emergency and hazard control
  - relevant organisation standard operating procedures (SOPs)
- ergonomics of using computers and related equipment

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- scope and range of available data relevant to work role
- routine problems that may arise and how to identify causes
- types and application of software relevant to work role.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operations and provide for demonstration of responding to problems
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate tools, equipment, data and documentation
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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

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MSMOPS400 Optimise process/plant area

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS400A Optimise process/plant area

Application

This unit of competency covers the skills and knowledge required to optimise the process performance of a complete process, plant area or system. It requires optimising a more significant portion of a plant than would be required for one of the PMAOPS3## series. It also requires a more strategic approach to the optimisation than the routine, day-to-day optimisation undertaken as a routine part of plant operation. The optimisation may, or may not involve capital expenditure.

It includes ensuring that the process/plant area complies with health, safety and environment (HSE) requirements, that process, plant and equipment improvement is planned and carried out, and that problems are solved to meet operational needs and ensure that production of finished goods meets customer requirements. It includes all items of equipment and unit operations which form part of the production process of a complete area.

This unit of competency requires the application of detailed operational and process knowledge, including the principles of operation of equipment, and the chemistry and/or physics and/or biology/biochemistry of changes to materials occurring during processing. It embodies a significant breadth and depth of technical knowledge and process understanding which is applied to process improvement.

This competency is typically performed by a senior operator, team leader or frontline manager.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Analyse and evaluate current plant, equipment and processes	1.1	Compare actual process, plant and equipment performance with requirements and/or historical data/records and/or design performance
		1.2	Identify abnormal or sub-optimal process, plant and equipment performance
		1.3	Identify hazards associated with the plant and equipment
		1.4	Collect and evaluate product, materials and/or process records to determine possible causes for sub-optimal performance
		1.5	Use appropriate techniques to rank possible causes from most to least probable cause
2	Develop plan for corrective and/or optimisation action	2.1	Analyse causes to determine appropriate corrective action
		2.2	Predict the impact of a change in one unit/area on other related plant units/areas
		2.3	Predict the impact of a change on HSE performance
		2.4	Develop measurable objectives and evaluate alternatives
		2.5	Identify requirements to implement change
		2.6	Consult with stakeholders regarding planned changes and impacts
		2.7	Develop optimisation plan taking account of hazards identified and HSE implications and communicate to appropriate personnel
		2.8	Evaluate optimisation action to determine measures of effectiveness

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3	Coordinate corrective and/ or optimisation action plan	3.1	Coordinate all appropriate unit areas and operations in order to rectify problem causes in process, plant and equipment performance
		3.2	Initiate and/or implement all required corrective/optimisation actions
		3.3	Communicate corrective/optimisation outcomes to all relevant personnel
		3.4	Record and maintain log of all relevant information
4	Develop continuous improvement strategies	4.1	Identify opportunities to continuously improve performance of process/plant area
		4.2	Develop recommendations for continual improvement of process, plant and equipment effectiveness
		4.3	Consult with appropriate personnel and implement continuous improvement strategies
		4.4	Document implementation of continuous improvement strategies

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)

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- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

All operations to which this unit applies are subject to stringent 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:

- equipment start-up, operation and shutdown procedures
- calibration and maintenance schedules
- quality manuals and procedures
- organisation recording and reporting procedures
- material, production and product specifications
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Process optimisation

Process optimisation requires application of detailed operational and process knowledge to address one or more of the following:

- starting material quality
- yield maximisation
- throughput maximisation
- energy efficiency
- use of utilities
- labour utilisation
- overall cost
- efficient use of equipment

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- reducing downtime
- minimisation of waste and rework
- improved workplace layout and work flow

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS400A Optimise process/plant area

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS400 Optimise process/plant area

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS400A Optimise process/plant area

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 and interpret information from a range of internal and external sources
- use analytical techniques to identify cause of a complex problem
- determine corrective actions to optimise the condition of the process, plant and equipment
- plan and coordinate corrective/optimisation actions and related changes that may be required
- develop written plans
- complete documentation
- identify and control hazards by applying the hierarchy of control as part of the optimisation process
- distinguish between:
  - optimum and marginal performance of the plant
  - effective and marginal performance corrections and actions
- communicate and consult with stakeholders at all levels
- read and interpret technical information and relevant regulatory requirements
- develop and implement continuous improvement strategies.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- hazards that may arise in the job/work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- relevant technical theory of the plant area
- an in depth understanding of plant and process across the entire plant area being optimised
- process parameters and limits, including:
  - temperature
  - pressure
  - flow
  - pH

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- effects of variations in process conditions and materials
- functions and principles of operation of equipment in the production process
- chemistry and/or physics and/or biology/biochemistry relevant to changes to materials during processing.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- It is desirable that this evidence comes from implemented optimisation projects. However, where the project does not receive sanction to be implemented, or is otherwise not implemented, then sufficient evidence may be able to be obtained from a detailed implementation plan and a simulated implementation.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should occur in operational workplace situations. Where this is not possible, or practical, assessment must occur in a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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

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MSMOPS401 Trial new process or product

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS401A Trial new process or product

Application

This unit of competency covers the skills and knowledge required to take a lead technical role in the trialling of a new or significantly altered product or process. The new/changed product/process has been independently developed and its development is not part of this unit.

The unit of competency applies to a person in a technician role in a plant or a similar role. The technician is expected already to be a technical expert in that part of the plant/process where the trial is being conducted and be able to operate and control all equipment required for the trial. The technician is often the most technically competent member of an operational team. As such, they may not have the 'hands on' role of operating items of equipment; but they are required to have the competence to direct the operation of equipment as appropriate throughout the trial.

Typically the technician will be part of a team during the trial and will work in conjunction with a process/product development expert, such as a chemist or engineer and liaise and cooperate with other members of the team.

Trialling refers to the scale-up and other development steps required to take a new product or process from its design/laboratory trials to full commercial operation on a plant. Trialling may be done on a pilot plant where available and/or on a full scale plant.

This unit of competency does not apply to minor modifications to existing products or processes. Similarly it does not apply to a technician or operator taking part in such trials and/or who is simply following directions from a technician, chemist, engineer, supervisor or manager.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Contribute to the selection of equipment/ process conditions	1.1	Liaise with appropriate technical experts
		1.2	Interpret properties of materials and desired product characteristics
		1.3	Interpret technical specifications/drawings of plant requirements
		1.4	Recommend equipment/ancillary equipment appropriate for the materials, products and conditions
		1.5	Recommend process conditions appropriate for the equipment, materials and product characteristics
		1.6	Recommend feed rates/order/condition appropriate to the process conditions, equipment, materials and product characteristics
		1.7	Ensure hazard identification and analysis procedures are completed, including consultation with stakeholders, and findings included in plan
		1.8	Ensure recommendations meet the identified need
2	Prepare for trials	2.1	Determine the availability of resources required, such as materials, equipment, people and skills
		2.2	Estimate time required for trial
		2.3	Liaise with relevant stakeholders
		2.4	Schedule trial at a convenient time

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		2.5	Develop documentation for the trial
		2.6	Identify potential hazards and required hazard control procedures by applying the hierarchy of control
		2.7	Determine permit and other authorisation requirements and special safety and storage requirements
		2.8	Verify decisions with appropriate experts/stakeholders
		2.9	Ensure people with adequate skills are available for the trial
3	Conduct trials	3.1	Ensure hazard controls are implemented prior to commencement
		3.2	Run trials
		3.3	Maintain communication with all relevant personnel
		3.4	Closely monitor critical parameters
		3.5	Recognise actual and potential problems
		3.6	Make adjustments to process conditions as required during trial
		3.7	Sample and test product as required
		3.8	Record and report performance data
		3.9	Ensure all materials, products and waste are handled correctly
		3.10	Leave plant in a condition suitable for routine production to recommence
4	Evaluate results and identify modifications	4.1	Interpret data from trial
		4.2	Identify factors which might be related to low rates or low charge amounts
		4.3	Recommend modifications and improvements required
		4.4	Develop and check standard operating procedures (SOPs)

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4.5 Complete documentation and report to appropriate personnel

4.6 Ensure all relevant staff have required skill levels for the introduction of the new process

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

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:

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- emergency procedures
- work instructions
- SOPs
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Technical experts

Technical experts include one or more of the following:

- manufacturers
- chemists
- engineering personnel
- designers
- WHS advisors
- maintenance personnel
- potential customers

Non-routine problems

Routine problems must be resolved by applying known solutions.

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems are unexpected problems, or variations of previous problems and include one or more of the following:

- mixing is poor
- materials do not behave as expected
- process/reaction does not proceed/proceeds too slowly
- process/reaction proceeds too quickly/runs away
- yield is low
- quality is out of specification
- process is unstable
- instrumentation is not sufficiently sensitive/too sensitive

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- variable catalyst activity
- surging flow/pressure

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Hazard analysis procedures

Hazard analysis procedures must be undertaken, however, it is not required that the candidate conducts the procedures. Hazard analysis procedures include one or more of the following:

- job safety analysis (JSA)/job hazard analysis (JHA)
- hazard and operability (HAZOP) studies
- hazard analysis (HAZAN) studies
- similar company specified procedures

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS401A Trial new process or product

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS401 Trial new process or product

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS401A Trial new process or product

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:

- analyse technical information from a range of sources
- determine recommendations for new process or product, including:
  - materials
  - equipment
  - process and process conditions
  - required variations in process variables
- plan the trials
- conduct trials
- communicate and liaise with people at a range of levels about technical matters
- write technical documentation, including specifications and procedures required for the trial
- ensure formal hazard analysis procedures are undertaken
- recognise early warning signs of equipment/processes or potential problems needing attention
- isolate the causes of problems to an item of equipment within the plant system
- identify any additional skills needs.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures
- relevant technical theory of the plant area
- chemistry and/or physics and/or biology/biochemistry relevant to changes to materials during processing
- effects of variations in process conditions and materials
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions
- methods of changing rate and the advantages and disadvantages of each
- methods of controlling other process variables and the advantages and disadvantages of each.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- The trial may, or may not be a success.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should occur in operational workplace situations. Where this is not possible or practical, assessment must occur in a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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

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MSMOPS601 Design equipment and system modifications

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS601A Design equipment and system modifications

Application

This unit of competency covers the skills and knowledge required to design equipment and system modifications in a manufacturing situation. This unit is typically performed by high-level staff working as part of a design, development and implementation team and taking a lead technical role.

It does not include the design of equipment requiring specialist engineering skills or regulatory licensing, although it may include working with a person with this skill/licence.

This unit of competency applies to people who design modifications to equipment or systems, typically used for production. The modification may be to improve productivity, improve reliability, reduce waste (muda), reduce cost or other reasons. The competency can apply to the design of equipment/system modifications associated with product changes or improvements and/or establishment of a new production line/product. Typically it will be to meet a specified end use. This will involve working closely with a range of management and operations personnel and requires balancing the business, operational and technical sides of the modified equipment/system. This unit of competency applies to the technical expert. The competency is applied under limited guidance in line with a broad plan, budget or strategy. It will typically involve capital expenditure.

This unit competency is typically performed by senior technologists working in liaison with other technical experts, operations management, operators and other relevant people with whom they would work as part of a (possibly ad hoc) team.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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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 requirements	1.1	Establish modification or design requirement
		1.2	Establish design concepts
		1.3	Establish design limitations
		1.4	Consult with specialists/experts as required
2	Evaluate options	2.1	Define options
		2.2	Determine most appropriate modification
		2.3	Confirm selected option with appropriate personnel in accordance with workplace procedures
3	Design modifications	3.1	Design modification to meet end use specifications/standards and all legislative or regulatory requirements
		3.2	Verify design in accordance with enterprise procedures
		3.3	Check the modifications will not compromise health, safety and environment (HSE) performance
		3.4	Determine required outcome tests and results to establish conformance to requirements
4	Coordinate design implementation and testing in accordance with enterprise	4.1	Initiate implementation of the design/modification
		4.2	Coordinate implementation of the design/modification
		4.3	Assess design outcome test results

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	requirements	4.4	Assess any required variations to the design
		4.5	Prepare documentation to meet enterprise requirements
5	Maintain records	5.1	Maintain records of design and modification outcomes in accordance with enterprise procedures

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
- relevant Australian design standards
- workers' compensation legislation and regulation

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some

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other form, and include one or more of the following:

- all work instructions
- standard operating procedures (SOPs)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant
- good operating practice as may be defined by industry codes of practice (e.g. Responsible Care)

Modification/design requirements

Modification/design requirements include consideration of the following factors:

- production requirements
- facility requirements
- HSE requirements
- sustainability requirements
- other factors relevant to the job/work environment

Design concepts

Design concepts include at a minimum:

- process
- material
- quantity
- cost
- outcome

Design limitations

Design limitations will be determined through consideration of:

- codes
- regulations
- technical documentation
- other factors relevant to the job/work environment.

Design

The design is to be for the modification of process plant/equipment.

Design must include:

- design research and consultation with internal or external specialists

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- assessment and evaluation of design concepts
- design implementation and testing of modifications

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS601A Design equipment and system modifications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMOPS601 Design equipment and system modifications

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS601A Design equipment and system modifications

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:

- interpret design requirements
- evaluate design options against modification/design requirements
- assess and evaluate design concepts
- implement and test modifications
- apply technical skills, including performing technical calculations
- conduct tests and prepare drawings/documentation
- communicate effectively within the workplace, including liaising with other departments and consultation with internal or external specialists
- establish or interpret procedures, where required
- determine report requirements and present information in appropriate formats.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- appropriate design techniques
- relevant Australian (or other) design standards
- relevant regulatory requirements and codes of practice
- HSE considerations in relation to equipment/system design
- workplace requirements
- reporting/recording processes
- internal and external stakeholders and sources of expertise
- enterprise production processes, facility and materials and how they relate to equipment/system design.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:

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  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- It is desirable that this evidence comes from implemented design projects. However, where the project does not receive sanction to be implemented, or is otherwise not implemented, then sufficient evidence may be able to be obtained from a detailed implementation plan and a simulated implementation.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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

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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

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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

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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.

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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

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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

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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

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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

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- 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.

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MSMPER201 Monitor and control work permits

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER201A Monitor and control work permits

Application

This unit of competency covers the skills and knowledge required to monitor a work situation in which the activity is conducted under a permit to work. The individual will be required to monitor the work situation for conformance to the permit and immediately intervene if the parameters of the permit are not met or work proceeds outside the boundaries set by the permit.

This role is typically carried out by the plant operator for that area or other suitably qualified person.

The role of ‘hole watcher’ and ‘fire watcher’ are covered by MSMPER202 Observe permit work

This unit of competency carries a high level of responsibility and the level and area of responsibility of the role is typically prescribed by the permit process.

This unit of competency applies to the activities and functions associated with work carried out in a hazard controlled environment.

Not all sites/plants will have all permits. Some sites will call permits by other names, e.g. clearances.

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

Pre-requisite Unit

Nil

Competency Field

Work control systems

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify and monitor permit conditions	1.1	Identify permit requirements
		1.2	Monitor conditions to ensure that the work being conducted conforms to the issued permit requirements
		1.3	Identify and communicate changes in the operating conditions or requirements of the permit to permit holders to ensure they are kept aware of any hazards
2	Control work permit systems	2.1	Check and verify the permit holder's knowledge of the issued permit and its requirements before allowing any work to be undertaken
		2.2	Control work activities to comply with the work permit system and safety procedures
		2.3	Undertake site inspections to ensure that the work to be undertaken is in sequence and completed in a safe and coordinated manner
		2.4	Identify hazards, and confirm with those undertaking the permitted work that control measures, as defined in the permit, are established
3	Identify and action non-compliance	3.1	Identify conditions of active permits
		3.2	Take corrective action upon incidences of non-compliance with permit conditions through the withdrawal or suspension of the issued permit
		3.3	Report and record incidents of non-compliance according to procedures

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4	Confirm compliance with permit	4.1	Complete checklists in accordance with standard procedures
		4.2	Document and communicate findings to appropriate personnel

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 requirement
- Dangerous Goods regulations
- Hazardous substances regulations
- Hazardous Substances Information System
- Major hazard facility requirements, if relevant
- Australian Standard AS 2865-2009 Confined spaces
- Australian Standard AS 1674 Set-2007 Safety in welding and allied processes (covers all hot work)
- Australian Standard AS 4024.1-2014 Series - Safety of machinery
- Australian Standard AS/NZ 1715:2009 Selection use and maintenance of respiratory protective equipment
- National Standard for Plant [NOHSC:1010 (1994)]
- National exposure standards for atmospheric contaminants in the

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occupational environment [NOHSC:1003 (1995)]

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 control 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

Work permits

Work permits include one or more of the following:

- cold work
- excavation
- vehicle entry
- minor repairs
- working at heights
- hot work
- confined space
- electrical
- increased hazard
- permits covering a single plant item or plant area, such as might be an operator's scope of responsibility
- other relevant permits

The work control (permit) system

The work permit system includes:

- types of permits
- legislative/regulatory/standards framework
- roles and responsibilities of parties under the permit system
- specifications for undertaking the work covered by a permit
- alternative ways of conducting a job

Work

Work specifications include one or more of the following:

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specifications

- any requirements for testing of atmospheric conditions and ventilation
- safety structures and control measures
- communications
- incident response
- equipment which can and cannot be used

Safety structures and control measures

Safety structures and control measures include one or more of the following:

- isolations
- lockout/tag out
- barriers and signage
- emergency response
- gas testing/atmosphere monitoring
- standby person
- other measures specified in the permit

Monitor

Monitor includes observing conditions of the workplace at a frequency appropriate to the risk and work practices, and includes one or more of the following:

- supervision/monitoring of contractors and/or employees
- verification of permits, licences and tests
- document control
- checking work activities against permit conditions, site-specific safety procedures and requirements and relevant legislation/codes
- identifying non-compliances
-

Tools and equipment

Tools and equipment include one or more of the following:

- locks and tags
- blinds/blanks
- blind/blank list
- gas testers and monitors
- barricades
- signage
- communications equipment
- process and equipment drawings
-

Hazards

Hazards include one or more of:

- process isolations incomplete

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- mechanical and electrical isolations not in place
- atmospheric testing incomplete and atmosphere not safe
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working where a fall is reasonably likely, in restricted or confined spaces, or in environments subjected to heat, noise, dusts, smoke, darkness, vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMPER201A Monitor and control work permits

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPER201 Monitor and control work permits

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER201A Monitor and control work permits

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 activities requiring a permit and type of permit required
- monitor the conditions of work under the permit
- identify changes in work and site circumstances that affect permit
- communicate effectively with team/work group and other personnel to:
  - explain the requirements of the permit
  - explain and verify complex issues and requirements relevant to permit conditions
  - withdraw or cause work to cease outside permit conditions
  - explain and implement safety and incident response procedures
- identify and report any non-conformance with permit conditions
- speak clearly and unambiguously in the language of the worksite
- complete workplace forms and reports
- differentiate between acceptable and unacceptable conditions

identify hazards and apply relevant hazard controls.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - work permit systems
  - safety, emergency and hazard control
  - incident response
  - plant isolation and preparation requirements
  - relevant organisation procedures
- hazards that may arise in the job and plant, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- functions and components of a permit system

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- types of permits, what they cover, limitations and associated hazards.

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 shall be 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
  - must include the use of typical permits
  - 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

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MSMPER202 Observe permit work

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER202A Observe permit work

Application

This unit of competency covers the skills and knowledge required to undertake the safety observer role for permits requiring a safety observer. This role may also be called a hole watcher or a fire watcher.

Safety observers can stop permit work, but do not have the authority to restart it.

This unit of competency applies to a member of the work team or an operator who performs this role.

Where the person is safety observer for confined space permit they should also be competent in confined space entry.

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

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1	Prepare for the job	1.1	Check the permit issued is appropriate and sufficient for the work to be done
		1.2	Prepare a rescue/incident response plan in accordance with procedures
		1.3	Check plan is workable within the approved job procedures and issued permit
		1.4	Request revision of job procedures and/or permit to ensure rescue/incident response plan is practical
2	Control the permit site	2.1	Interpret the hazard controls required by the permit
		2.2	Check all hazard controls are operational and complied with at all times
		2.3	Maintain constant communication with workers as relevant to the job and permit
		2.4	Control entry to and exit from the worksite in accordance with the requirements of the permit
		2.5	Monitor the environment of the worksite and adjacent areas
		2.6	Monitor scope and location of work as defined by the permit
		2.7	Withdraw permit and shut down worksite if conditions vary from those required by the permit
3	Take appropriate action for potential incident	3.1	Ensure all required first response equipment is in the location specified by the permit and is in working condition
		3.2	Ensure all required monitoring is carried out as required by the permit
		3.3	Withdraw permit and shut down worksite in the event of an alarm or monitoring failure
		3.4	Raise the alarm in the event of an incident
		3.5	Implement rescue/incident response plan as required by procedures

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4	Complete safety observer role	4.1	Hand over to oncoming safety observer before leaving role
		4.2	Complete all required documentation and reports

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
- Dangerous Goods regulations
- Hazardous substances regulations
- Hazardous Substances Information System
- Major hazard facility requirements if relevant
- AS 2865-2009 Confined spaces
- AS 1674 Set-2007, Safety in welding and allied processes (covers all hot work)
- AS/NZ 1715:2009 Selection use and maintenance of respiratory protective equipment
- National exposure standards for atmospheric contaminants in the occupational environment [NOHSC:1003 (1995)]

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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 control 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

Work permits

Work permits include one or more of the following:

- cold work
- excavation
- vehicle entry
- minor repairs
- working at heights
- hot work
- confined space
- electrical
- increased hazard
- permits covering a single plant or plant area such as might be an operator's scope of responsibility
- other relevant permits

The work permit system

The work permit system includes:

- types of permits
- legislative/regulatory/standards framework
- roles and responsibilities of parties under the permit system
- specifications for undertaking the work covered by a permit
- alternative ways of conducting a job

Work specifications

Work specifications include:

- any requirements for testing of atmospheric conditions and

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ventilation
- safety structures and control measures
- communications
- incident response
- equipment which can and cannot be used

Safety structures and control measures

Safety structures and controls measures include one or more of the following:

- isolations
- lockout/tag out
- barriers and signage
- emergency response
- gas testing/atmosphere monitoring
- standby person
- other measures specified in the permit

Hazards

Hazards include one or more of the following:

- process isolations incomplete
- mechanical and electrical isolations not in place
- atmospheric testing incomplete and atmosphere unsafe
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks

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- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMPER202A Observe permit work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPER202 Observe permit work

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER202A Observe permit 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 and demonstrate the ability to:

- read and interpret the safety and hazard control requirements of permit conditions
- prepare a rescue/incident response plan in accordance with procedures
- ensure workable rescue/incident response plan is in place and aligns with procedures and permit conditions
- ensure first response equipment is available and in working condition
- observe safety and hazard aspects of work activities under the permit and monitor conformance to permit conditions
- communicate effectively with team/work group and other personnel to:
  - explain and implement safety and incident response procedures
  - explain the requirements of the permit
  - withdraw or cause work to cease outside permit conditions
  - control entry to and exit from the job site
  - handover to oncoming safety observer
- speak clearly and unambiguously in the language of the worksite
- complete workplace forms and reports.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - work permit systems
  - safety, emergency and hazard control
  - incident response
  - relevant organisation procedures
- hazards that may arise in the job and plant, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- types of permits, what they cover and associated hazards
- scope and limitations of own role and responsibilities.

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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
  - must include the use of typical permits and situations
  - 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

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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.'

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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

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	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.

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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

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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

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- 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

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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

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- 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

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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

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- 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.

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- 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

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MSMPER300 Issue work permits

Modification History

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMPER300C Issue work permits

Application

This unit of competency covers the skills and knowledge required to issue work permits. It covers an understanding of the permit system and the limitations of each permit, and making decisions regarding the need for and correct use of each permit. This unit includes the issue of any and all permits. Permits are called ‘clearances’ by some organisations.

This unit of competency applies to personnel who are required to issue appropriate permits to work to persons conducting a variety of activities in workplace environments in which hazards exist or specific procedures need to be followed and monitored to protect the safety of personnel and the integrity of plant or process.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

MSMWHS201 Conduct hazard analysis

Competency Field

Work control systems

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes		demonstrate achievement of the element	
1	Identify need for work permit	1.1	Identify work permit needed from job scope
		1.2	Confirm with appropriate personnel the need for work permit
2	Ensure job site is prepared for authorised work	2.1	Inspect the job site
		2.2	Identify work health and safety (WHS) and environmental requirements
		2.3	Conduct hazard identification and risk assessment
		2.4	Ensure job site is prepared in accordance with specified work permit conditions
		2.5	Check permit conditions and report to appropriate personnel
		2.6	Conduct job site testing in accordance with procedures
3	Raise and issue work permits	3.1	Ensure conditions are documented on permit
		3.2	Ensure appropriate testing is carried out and results documented in accordance with procedures
		3.3	Determine an appropriate validity period
		3.4	Check that permit conditions are met (i.e. validate permit)
		3.5	Complete and authorise permit
		3.6	Ensure recipient is advised of and agrees to abide by the requirements of the permit
		3.7	Ensure recipient signs permit
4	Monitor work for compliance	4.1	Ensure regular job site inspections are done
		4.2	Monitor conditions and work progress and respond

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			appropriately to changing conditions and circumstances
		4.3	Ensure permit currency and revalidate as required
		4.4	Ensure permit is displayed in accordance with procedures
		4.5	Identify and act on incidences of non-compliance and report promptly to relevant personnel
		4.6	Withdraw/cancel permit if conditions warrant it
		4.7	Report any issues which arise with regard to work under the permit in accordance with procedures
5	Receive end of day report	5.1	Receive end of day report from permit recipients
		5.2	Confirm job progress and status.
		5.3	Revalidate/arrange for revalidation of permit as required
		5.4	Confirm work area has been left safe
		5.5	Handover ongoing permits and status of suspended permits to oncoming shift
6	Close work permit	6.1	Inspect job status
		6.2	Check that work undertaken satisfies permit conditions
		6.3	Ensure that work site is ready for a safe return to working conditions
		6.4	Check required returns to work status have been completed
		6.5	Sign off documentation and close permit in accordance with procedures
		6.6	Communicate worksite and process status to relevant personnel

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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
- Dangerous Goods regulations
- Hazardous substances regulations
- Hazardous Substances Information System
- Australian Standard AS 2865 2009 Confined spaces
- Australian Standard AS 1674 Set-2007, Safety in welding and allied processes (covers all hot work)
- Australian Standard AS 4024.1-2014 Series - Safety of machinery
- Australian Standard AS/NZ 1715:2009 Selection use and maintenance of respiratory protective equipment
- National Standard for Plant [NOHSC:1010 (1994)]
- National exposure standards for atmospheric contaminants in the occupational environment [NOHSC:1003 (1995)]

Procedures

All operations are 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:

- emergency procedures
- workplace procedures

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- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- company policy and permit control systems

Work permits

Work permits include one or more of the following:

- cold work
- excavation
- vehicle entry
- minor repairs
- working at heights
- hot work
- confined space
- electrical
- increased hazard
- permits covering a single plant or plant area, such as might be an operator's scope of responsibility
- other relevant permits

The work permit system

The work permit system includes:

- types of permits
- legislative/regulatory/standards framework
- roles and responsibilities of parties under the permit system
- specifications for undertaking the work covered by a permit
- alternative ways of conducting a job

Work specifications

Work specifications include:

- any requirements for testing of atmospheric conditions and ventilation
- safety structures and control measures
- communication
- incident response
- equipment which can and cannot be used

Safety structures and control measures

Safety structures and control measures include one or more of the following:

- isolations

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- lockout/tag out
- barriers and signage
- emergency response
- gas testing/atmosphere monitoring
- standby person
- other measures specified in the permit

Confined space

AS 2865 2009 Confined spaces definition given for confined space is used in this Training Package, i.e.:

'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'

Hot work

Hot work includes:

- any activity which has the potential to be or cause a source of ignition

Hazards

Hazards include one or more of the following:

- slip/trip hazards
- PPE unavailable and not functional
- emergency equipment unavailable
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment in unsafe condition with hazard controls not functional
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration

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- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions, swarf and scrap
- spills or leaks
- extreme weather
- 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
- other hazards that might arise

Unit Mapping Information

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMPER300C Issue work permits

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPER300 Issue work permits

Modification History

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMPER300C Issue work permits

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:

- recognise types of work permits required for different situations
- undertake and interpret hazard analysis
- conduct and interpret tests/inspections for gas or other hazards, including one or more of:
  - atmospheric, including explosivity
  - flammability
  - toxicity
  - temperature
  - humidity
  - combustibles, oxygen, enriched or reduced
  - electricity
  - stored pressure/energy
- ensure correct preparation of worksite is undertaken, including one or more of:
  - mechanical, electrical and other energy sources, and process isolations
  - de-energising all sources of energy/pressure
  - purging of plant
  - ventilation of plant
  - lockout/tag out procedures
  - blinding/blanking lines
  - other hazard controls
- ensure supervision/monitoring of people working under the permit
- speak clearly and unambiguously in the language of the worksite.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the organisation's work control system
- types of permits and their application
- hazards of the area for which permit is being issued

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- hazards that may be created by the interactions of the permit, the job, the process and the plant area
- focus of operation of work systems and equipment.

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 require the issuing of example permits for realistic case study situations
  - 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.

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MSMPER400 Coordinate permit process

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER400A Coordinate permit process

Application

This unit of competency covers the skills and knowledge required for the issuing and auditing of any and all permits across multiple plant areas or an entire site. It covers both the issuing of permits directly and also the coordination of permits issued by others. It focuses on potential conflicts between work being undertaken as well as checking that the permit system is being used correctly.

This unit of competency requires the application of detailed operational and process knowledge which is applied to coordinating permits, overseeing plant preparations and testing for permit work.

This competency is typically performed by a senior process technician. This may be a routine job, a role in part of a job or a temporary role in a shut down or similar.

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

Pre-requisite Unit

MSMPER300 Issue work permits

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

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1	Assess planned work for conflicts	1.1	Identify all work planned for a time period
		1.2	Determine the scope and health safety and environment (HSE) impacts of each planned job
		1.3	Confirm hazard analysis and controls for each planned job
		1.4	Compare hazard profiles for each planned job
		1.5	Identify conflicts between planned jobs
		1.6	Negotiate a solution between conflicts
		1.7	Communicate results of negotiations to relevant stakeholders
2	Issue required permits	2.1	List those jobs which will be allowed to proceed in the time period
		2.2	Confirm hazard controls required for these jobs
		2.3	Identify jobs which have impacts across plant areas
		2.4	Ensure controls and communications are adequate
		2.5	Issue/cause to be issued required permits
		2.6	Report as required by procedures
3	Audit live permits	3.1	Audit plant preparations.
		3.2	Audit permit issuing process
		3.3	Check appropriate controls have been specified
		3.4	Audit handover/sign-on process
		3.5	Audit work in progress for conformance to permit conditions
		3.6	Audit work completion and hand back/close out process
		3.7	Audit deisolation and return to work preparations

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		3.8	Take immediate and appropriate action on any problems found
		3.9	Report on audit as required by procedures
4	Audit past permits	4.1	Obtain relevant paper work
		4.2	Check for conformance to procedures
		4.3	Check for appropriateness of specified hazard controls
		4.4	Identify any non-conformance
		4.5	Identify systemic non-conformances
		4.6	Take any immediate action which is appropriate
		4.7	Report on audit as required by procedures
5	Analyse audit findings	5.1	Identify improvements to the permit system
		5.2	Identify improvements to the implementation of the permit system
		5.3	Suggest improvements to the permit system as appropriate
		5.4	Suggest improvements to hazard analysis processes
		5.5	Suggest improvements to the plant preparation/return to operations processes
		5.6	Suggest improvements to hazard controls
		5.7	Suggest training required as appropriate

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.

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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
- Dangerous Goods regulations
- Hazardous substances regulations
- Hazardous Substances Information System
- AS 2865 2009 Confined spaces
- AS 1674 Set-2007, Safety in welding and allied processes (covers all hot work)
- AS 4024.1-2014 Series - Safety of machinery
- AS/NZ 1715:2009 Selection use and maintenance of respiratory protective equipment
- National Standard for Plant [NOHSC:1010 (1994)]
- National exposure standards for atmospheric contaminants in the occupational environment [NOHSC:1003 (1995)]

All operations to which this unit applies are subject to stringent 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 control system
- emergency procedures
- work instructions

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- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Work permits

Work permits include one or more of the following:

- cold work
- excavation
- vehicle entry
- minor repairs
- working at heights
- hot work
- confined space
- electrical
- increased hazard
- other relevant permits

The work permit system

The work permit system includes:

- types of permits
- legislative/regulatory/standards framework
- roles and responsibilities of parties under the permit system
- specifications for undertaking the work covered by a permit
- alternative ways of conducting a job

Under a work permit system a 'competent person' is a person who has, through a combination of training, education or experience, acquired knowledge and skills enabling that person to correctly perform a specified task.

Work specifications

Work specifications include:

- any requirements for testing of atmospheric conditions and ventilation
- safety structures and control measures
- communication
- incident response
- equipment which can and cannot be used
- re-authorisation/reissue requirements
- revalidation requirements

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Safety structures and control measures Safety structures and control measures include one or more of the following:

- isolation
- barriers
- lockout/tag out signs and procedures
- automatic plant shutdown buttons
- cords/lanyards
- alarms
- barriers
- guards
- earth leakage devices
- warning lights

Live permits Live permits are permits that apply to work currently being done

Past permits Past permits are permits that have been handed back/closed out

Audit permits Auditing of permits requires one or more of the following:

- selecting an individual permit and following it through
- spot checking key aspects of permits
- intensively checking one aspect of the process with all permits on issue

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMPER400A Coordinate permit process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPER400 Coordinate permit process

Modification History

Release 1. Supersedes and is equivalent to MSAPMPER400A Coordinate permit 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 and demonstrate the ability to:

- prepare and issue at least one (1) permit from three (3) different permit types
- analyse and resolve two (2) or more jobs with the potential to have conflict
- prepare at least one (1) audit report on live permits and one (1) on past permits, including the analysis of the audit findings
- analyse all current and proposed work to determine hazard controls and permit requirements
- coordinate the issue of permits for planned jobs
- ensure that issued permits specify appropriate conditions
- plan and undertake audits of live and past permits
- analyse audit results and identify improvements
- identify non-conformances and take appropriate action
- communicate effectively with team/work group and other personnel.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- organisation work control system procedures
- the operations of the plant and each major unit in it
- hazards that may arise in plant materials, processes and process conditions, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
  - hierarchy of control
- plant preparation and isolation procedures

auditing principles.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - 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
  - 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

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MSMPMC302 Operate equipment to blend/mix materials

Modification History

Release 1. New Unit. Supersedes and is equivalent to PMC552002 Operate equipment to blend/mix materials.

Application

This unit describes the skills and knowledge required to select and blend or mix materials using blending or mixing and ancillary equipment.

This unit applies to operators who are required to take responsibility for own outputs and follow established procedures to select the correct type and quantity of materials; set up and operate equipment; and conduct routine maintenance. Operators are also required to work autonomously and apply their own judgement to interpret information; monitor processes; identify and address routine and non-routine problems and control hazards.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members, team leader and supervisor, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

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. Determine blend or mix requirements	1.1 Check work schedule and/or job specification and/or job card 1.2 Identify customer requirements and set parameters in accordance

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	with standard procedures 1.3 Select correct type and quantity of materials 1.4 Identify and action all special requirements and specifications 1.5 Identify and rectify any material handling problems in accordance with standard procedures 1.6 Update material records
2. Blend or mix materials	2.1 Set up, start and operate blending or mixing equipment and ancillary equipment as required by specifications 2.2 Prepare and add materials to blender or mixer as required by specification 2.3 Blend or mix materials and check that materials prepared match requirements
3. Monitor and record operation	3.1 Monitor equipment performance in accordance with work instructions and manufacturer specification 3.2 Monitor non-conforming product against customer specifications 3.3 Adjust and control equipment to ensure correct product quality 3.4 Complete final inspection checks 3.5 Complete appropriate records and logs
4. Maintain blending or mixing plant and area	4.1 Keep area and equipment clean and in good order 4.2 Unload and shut down equipment 4.3 Maintain records
5. Rectify routine and non-routine problems and faults	5.1 Identify and rectify faults and equipment failure 5.2 Maintain records and log books of equipment operations 5.3 Identify non-routine problems and report to designated person
6. Control hazards	6.1 Identify hazards in blending or mixing work area 6.2 Assess the risks arising from those hazards 6.3 Implement measures to control those risks

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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.

Unit Mapping Information

Release 1. New Unit. Supersedes and is equivalent to PMC552002 Operate equipment to blend/mix materials.

Links

Companion Volume Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPMC302 Operate equipment to blend/mix materials

Modification History

Release 1. New Unit. Supersedes and is equivalent to PMC552002 Operate equipment to blend/mix materials.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- set up and operated the equipment according to procedures to blend or mix materials on at least 1 occasion, including:
  - monitoring the following key variables to ensure product integrity and conformance to specification:
    - process conditions and parameters
    - duration of blend and mix
    - mixing sequence
    - blend and mix tolerance
  - recognising possible causes of the following routine problems:
    - raw material variations
    - process problems
    - mechanical abnormalities
    - electrical or instrument reading variations
    - equipment faults, damage or failure.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of blending or mixing products
- blending and mixing equipment, including:
  - start-up, operation and shutdown processes
  - impact of equipment operation and limitations on mixing efficiency, effectiveness and quality of product
- vibration monitoring
- impact of:
  - blending or mixing on final product
  - variations in product specification on the blending or mixing process
  - variations in raw materials in relation to quality of product

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- process used to transform the feed materials into the product
- product specifications and tolerances
- routine problems and factors which may affect product quality or production output, their probable causes and relevant corrective actions
- enterprise production schedules
- blending and mixing hazards and:
  - their possible causes
  - potential consequences
  - risk control procedures
  -

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - blending or mixing equipment and ancillary equipment
  - materials to be blended or mixed
  - specifications, procedures and job sheets
- modelling of industry operating conditions, including:
  - routine and non-routine problems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMPMC303 Operate grinding equipment

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC552003 Operate grinding equipment.

Application

This unit describes the skills and knowledge required to operate grinding and ancillary equipment to reduce the size of raw materials, materials in process, product, scrap and recycled material.

This unit applies to operators who are required to take responsibility for own outputs and follow established procedures to conduct pre-start checks, prepare materials, start and operate equipment, facilitate output changes and distribute ground materials. Operators are also required to work autonomously and apply their own judgement to interpret information; monitor processes; identify and address routine and non-routine problems and control hazards.

This unit applies to an individual working alone or as part of a team or group and in liaison with other shift team members, team leader and supervisor.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to grind materials	1.1 Check equipment for hazards, danger and isolation tags 1.2 Perform checks to ensure all doors, inspection openings and guards are in position and secure 1.3 Adjust equipment settings to ensure conformance with standard operating procedures (SOPs) 1.4 Notify appropriate personnel of intention to start equipment 1.5 Conduct additional pre-start checks as required in accordance with SOPs 1.6 Check adequate supply of materials is available to meet production requirements
2. Grind materials	2.1 Start equipment in sequence in accordance with SOPs 2.2 Monitor instrument and control panels and adjust as necessary to remain within specified operating parameters 2.3 Make physical inspections of plant and equipment at specified intervals to identify any anomalies 2.4 Maximise product throughput and efficiency to maintain target parameters 2.5 Communicate with appropriate personnel regarding the status of operations 2.6 Employ safe working practices 2.7 Shut down equipment and complete required records
3. Distribute ground product	3.1 Distribute ground materials to their correct silo or storage area 3.2 Monitor silo or storage areas to ensure compliance with enterprise storage quality and quantity requirements
4. Rectify routine problems	4.1 Identify and rectify faults and equipment failure 4.2 Maintain records and log books of equipment operations 4.3 Identify non-routine problems and report to designated person
5.Control hazards	5.1 Identify hazards in the grinding work area 5.2 Assess risks arising from those hazards 5.3 Implement measures to control those risks 5.4 Shut down in an emergency

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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.

Unit Mapping Information

Release 1. New unit. Supersedes and is equivalent to PMC552003 Operate grinding equipment.

Links

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Assessment Requirements for MSMPMC303 Operate grinding equipment

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC552003 Operate grinding equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- set up and operated the grinding equipment according to procedures to grind and distribute materials on at least 1 occasion, including:
  - monitoring the following key variables to ensure product integrity and conformance to specification:
    - process conditions and parameters
    - feed rates
    - temperature
    - moisture
  - recognising possible causes of the following routine problems:
    - raw material variations
    - process problems
    - mechanical abnormalities
    - electrical and instrument reading variations
    - equipment faults, damage or failure.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- grinding process
- equipment and ancillary equipment, including:
  - start-up, operation and shutdown procedures
  - functions and limitations of the grinding system
  - the potential effects of equipment operation in relation to quality of product and output
- types of materials and additives typically subject to grinding and impact on grinding processes
- the potential effects of variations in raw materials in relation to quality of product and output
- routine problems and factors that impact on product quality or production output, their probable causes and relevant corrective actions

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- enterprise production schedules
- work health and safety (WHS) requirements relevant to work outcome
- grinding hazards that may arise in the job and work environment and:
  - their possible causes
  - potential consequences
  - risk control procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - grinding equipment and ancillary equipment
  - materials to grind
  - specifications, procedures and job sheets
- modelling of industry operating conditions, including:
  - routine and non-routine problems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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MSMPMC306 Operate crushing equipment

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC552008 Operate crushing equipment.

Application

This unit describes the skills and knowledge required to operate crushing equipment and ancillary equipment. Crushing is typically applied in the manufacture minerals products industry to raw materials, materials in process, product and scrap and recycled material.

This unit applies to operators who are required to take responsibility for own outputs and follow established procedures to prepare, monitor and adjust the equipment and maintain supply of materials. Operators are also required to work autonomously and apply their own judgement to interpret information; monitor processes; identify and address routine and non-routine problems and control hazards.

This unit applies to an individual working alone or as part of a team or group and in liaison with other shift team members, team leader and supervisor.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to crush materials	1.1 Check equipment for hazards, danger and isolation tags in accordance with standard operating procedures (SOPs) 1.2 Perform checks to ensure all doors, inspection openings and guards are in position and secure 1.3 Adjust equipment settings to ensure conformance with SOPs 1.4 Notify appropriate personnel of intention to start equipment 1.5 Conduct additional pre-start checks 1.6 Confirm an adequate supply of materials is available to meet production requirements
2. Crush materials	2.1 Start equipment in sequence in accordance with SOPs 2.2 Monitor instrument and control panels and adjust equipment, controls and feed as necessary to remain within specified operating and safety parameters 2.3 Make physical inspections of plant and equipment at specified intervals as required by SOPs 2.4 Maximise product throughput and efficiency to maintain target parameters 2.5 Check screens and screened material 2.6 Communicate with appropriate personnel regarding the status of operations 2.7 Adjust to achieve required output 2.8 Distribute material as required
3. Rectify routine problems	3.1 Identify and rectify faults and equipment failures 3.2 Maintain records and log books of equipment operations 3.3 Identify non-routine problems and report to designated person
4. Control hazards	4.1 Identify hazards in the crushing work area 4.2 Assess the risks arising from those hazards 4.3 Implement measures to control those risks

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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.

Unit Mapping Information

Release 1. New unit. Supersedes and is equivalent to PMC552008 Operate crushing equipment.

Links

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Assessment Requirements for MSMPMC306 Operate crushing equipment

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC552008 Operate crushing equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- set up, configured, started and operated the crushing equipment according to procedures to achieve the required output on at least 1 occasion, including:
  - recognising possible causes of the following routine problems:
    - raw material variations
    - mechanical abnormalities
    - electrical and instrument reading variations.
    -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of:
  - crushing process
  - control of process
- crushing and ancillary equipment, including:
  - functions, limitations
  - startup, operation and shutdown procedures
  - the potential effects of equipment operations in relation to quality of product and output
- types of materials commonly crushed
- the potential effects of variations in raw materials in relation to quality of product and output
- routine problems and factors which may affect product quality or production output, their probable causes and relevant corrective actions
- sequence of isolation procedures and related hazards
- signals and alarms
- enterprise production schedules
- work health and safety (WHS) requirements relevant to work outcome

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- crushing hazards and:
  - their possible causes
  - potential consequences
  - risk control procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - crushing equipment and ancillary equipment
  - raw materials
  - specifications, procedures and job sheets
- modelling of industry operating conditions, including:
  - routine and non-routine problems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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MSMPMC324 Move materials

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC562070 Move materials

Application

This unit describes the skills and knowledge required to move materials around a site.

This unit applies to operators who are required to take responsibility for own outputs and follow established procedures to plan the moving of materials; ensure safety requirements are in place; perform pre-start checks; operate the equipment and secure, shift and stack materials. Operators are also required to work autonomously and apply their own judgement to interpret information; monitor processes; identify and address routine and non-routine problems and control hazards.

The person undertaking this role may require additional competencies to cover the operation of forklift trucks, cranes or other regulated load shifting devices. These additional competencies may require a licence or certification.

This unit applies to an individual working alone or as part of a team or group and in liaison with other shift team members, team leader and supervisor.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Support

Elements and Performance Criteria

Elements	Performance Criteria

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Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Perform pre-start checks	1.1 Perform pre-start checks of all plant and equipment in strict accordance with manufacturer and enterprise requirements 1.2 Inspect, activate and check for safe operation of all plant and equipment attachments consistent with standard operating procedures (SOPs)
2. Plan work load	2.1 Inspect work areas to identify hazards and implement the appropriate prevention and control measures 2.2 Erect relevant safety signs and barricades and take appropriate precautions to safeguard all site and non-site personnel 2.3 Select and use appropriate personal protective equipment (PPE) 2.4 Inspect work area to determine appropriate path for the movement of vehicular traffic 2.5 Check relevant work permits are issued and received by authorised personnel 2.6 Confirm job requirements and expectations with relevant personnel 2.7 Clarify non-standard requirements 2.8 Identify materials to be moved 2.9 Identify and clarify material movements required
3. Shift loads	3.1 Assess weight of load by specified methods to ensure compliance with equipment load plate specifications 3.2 Use the appropriate process, equipment and attachments to shift loads 3.3 Observe all regulatory requirements regarding shifting loads 3.4 Smoothly and consistently move controls and vehicle or equipment within safe operating practices and limits 3.5 Use standard communication signals to coordinate safe movement of load 3.6 Stack loads ensuring the stability of the stack without creating a hazard to personnel and equipment 3.7 Perform emergency evasive action should the need arise
4. Close down plant and equipment	4.1 Close down plant and equipment 4.2 Park or store and secure plant and equipment 4.3 Perform post-operational checks

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.4 Clean down plant and equipment and dispose of waste
5. Rectify routine problems	5.1 Identify and rectify faults and equipment failure 5.2 Maintain records and log books of equipment operations 5.3 Identify non-routine problems and report to designated person

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.

Unit Mapping Information

Release 1. New unit. Supersedes and is equivalent to PMC562070 Move materials

Links

Companion Volume Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMPMC324 Move materials

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC562070 Move materials

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- secured, shifted and stacked materials to meet safety and job requirements on at least 1 occasion, including:
  - recognising possible causes of the following routine problems:
    - raw material variations
    - equipment faults and abnormalities
    - procedure errors
    - documentation and communication errors.
    -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of safe and efficient transfer and storage of materials
- common types of plant, equipment and attachments used for shifting materials, including:
  - any licensing requirements
  - principles of operation
  - manual handling techniques and ergonomics
  - methods for determining mass and weight of loads
  - load securing methods
  - safe storage of dangerous goods and hazardous materials
  - transport requirements and restrictions for products and materials used in the work environment
  - emergency procedures
  - routine problems, their probable causes and relevant corrective actions
  - work permit system
  - hazards that may arise when moving materials and:
    - their possible causes
    - potential consequences
    - risk control procedures.
    -

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - equipment to move materials and personal protective equipment (PPE)
  - materials to be moved
  - specifications, procedures and job sheets
- modelling of industry operating conditions, including:
  - routine and non-routine problems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMSUP100 Apply workplace context to own job

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP100A Apply workplace procedures

Application

This unit of competency covers the skills and knowledge required to complete own work activities.

This unit of competency applies to personnel who are required to have a working knowledge of the organisation and its processes, products, customers and competitors and to work effectively within organisation procedures.

This is a general competency that is performed by all personnel.

It applies to an individual working alone or as part of a team/work group and working in liaison with other team members and supervisors.

This unit of competency applies to all areas of operation.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Identify industry sector**	1.1	Identify the industry sector
		1.2	Recognise the major competitors in the industry and their products
		1.3	State the major external issues facing the industry
2	**Identify products and customers**	2.1	Name company products
		2.2	State needs of external customers in line with organisation priorities
		2.3	State needs of internal customers
		2.4	Identify own role in meeting customer requirements
3	**Recognise plant structure and processes**	3.1	Identify key production sites/areas
		3.2	State own role in organisational structure
		3.3	Describe the production process relevant to own work area and relationship with other parts of the production process
4	**Identify own workplace responsibilities**	4.1	Identify company objectives
		4.2	Identify organisational policies and guidelines in relation to job role
		4.3	State key responsibilities, including work health and safety (WHS) of own section/team
		4.4	Identify task requirements within work role
		4.5	Describe own role in achieving section/team, plant and company objectives
5	**Follow workplace procedures**	5.1	Identify existing procedures relevant to job role
		5.2	Follow procedures in undertaking tasks

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		5.3	Seek advice from relevant personnel in clarifying procedures when appropriate
6	**Recognise quality requirements**	6.1	Identify instances of variation in quality from specifications or procedures
		6.2	Identify basic quality concepts to work activities
		6.3	Follow organisation procedures for reporting and managing variations
		6.4	Report problems with materials/product quality to appropriate person
		6.5	Follow organisation procedures for identifying and suggesting improvements to improve product quality
		6.6	Work within the organisation quality system
7	**Plan and follow a personal daily routine**	7.1	Plan own daily routine to take into account rosters, industrial agreements and workplace procedures
		7.2	Seek clarification of requirements of tasks when appropriate
		7.3	Agree achievable time and other performance measures
		7.4	Complete tasks and identify and report variations to plan

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems must be reported and corrective action taken according to relevant procedures.

Routine problems include one or more of the following:

- changes to the normal situation
- changes to the daily routine
- quality variations
- changes to the process inputs
- changes in the process

Corrective actions

Corrective actions include one or more of the following:

- reporting to an appropriate person

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- taking action specified in procedures

Appropriate personnel

Appropriate personnel include one or more of the following:

- supervisor
- more senior operator
- other designated personnel

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP100A Apply workplace procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP100 Apply workplace context to own job

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP100A Apply workplace procedures

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 include the ability to:

- use information contained in:
  - standard operating procedures (SOPs)
  - safety, hazard and incident procedures
  - maintenance logs
- identify processes relevant to work role
- identify work requirements and follow work instructions
- identify own and team/section role in meeting company objectives, including safety objectives and customer requirements
- identify the organisation's internal and external customers
- request advice and seek clarification in relation to job/work environment
- identify and apply quality standards
- recognise and report variations in quality and/or non-conformances
- identify routine problems and take corrective actions as required
- complete workplace forms and records

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - safety, emergency and hazard control
  - relevant SOPs
- the context in which the organisation operates, including:
  - the sector
  - major competitors
  - major external issues
- organisation goals, objectives and targets
- the impact of organisation procedures in own work, including:
  - equal employment opportunity (EEO) policies and procedures
  - ethical standards

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- work health and safety (WHS) policies, procedures and programs
- quality and continuous improvement processes and standards.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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MSMSUP101 Clean workplace or equipment

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP101A Clean workplace or equipment.

Application

This unit describes the skills and knowledge required for general housekeeping duties as well as the cleaning of plant and equipment. It covers identifying and maintaining housekeeping requirements and standards.

This unit applies to personnel who are required to keep the work area, plant and equipment clean and tidy whether as a small or significant part of their role.

This unit applies to an individual working alone or as part of a team or work group and working in liaison with other team members and supervisors.

This unit applies to all work environments.

This unit focuses on working safely to meet requirements. It does not cover the operation of specific equipment or cleaning procedures. Specific housekeeping and cleaning activities and equipment to be used will vary between organisations in response to differences in plant configuration, process, practices and procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

Elements and Performance Criteria

Elements	Performance Criteria

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Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify housekeeping requirements	1.1 Identify site safety and housekeeping standards for the role and work environment 1.2 Identify hazards and follow specified hazard controls 1.3 Undertake housekeeping inspection in accordance with procedures 1.4 Identify and schedule housekeeping requirements
2. Perform general housekeeping duties	2.1 Keep designated work areas clean to organisation standards 2.2 Keep designated work areas clear of obstructions 2.3 Handle and use chemicals and solvents in accordance with procedures 2.4 Ensure work area is ready for next user 2.5 Remove work materials, tools and equipment to designated locations
3. Clean plant and equipment	3.1 Identify organisation procedures for routine and specialised cleaning for the role and work environment 3.2 Use appropriate personal protective equipment (PPE) 3.3 Apply procedures to keep assigned plant and equipment clean 3.4 Perform specialised cleaning procedures as required
4. Dispose of waste materials	4.1 Correctly identify waste materials 4.2 Remove waste materials to a designated location

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP101A Clean workplace or equipment.

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Assessment Requirements for MSMSUP101 Clean workplace or equipment

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP101A Clean workplace or equipment.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified, scheduled and performed housekeeping, cleaning and waste disposal duties in accordance with required standards and procedures
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisation procedures, including:
  - housekeeping
  - cleaning and waste disposal for the role and work area
  - safety, emergency and hazard control
- relevant safety data sheets (SDS) for cleaning and process materials
- types and applications of personal protective equipment (PPE)
- hazards that may arise in the role and work area and appropriate action.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - cleaning tools and equipment, including personal protective equipment (PPE)
  - cleaning and workplace hazard reporting procedures and forms.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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MSMSUP102 Communicate in the workplace

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP102A Communicate in the workplace.

Application

This unit describes the skills and knowledge required to receive, relay and record written and oral messages and to provide relevant information in response to requests within timelines.

This unit applies to personnel who are required to communicate clearly and accurately to record messages, seek clarification, access needed information, relay information to other people and complete workplace documentation.

This unit applies to all work environments.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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. Receive and relay messages	1.1 Receive message and confirm understanding 1.2 Accurately record the message 1.3 Relay message accurately to appropriate person or section within designated timelines

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
2. Interpret messages	2.1 Clarify message if necessary 2.2 Take appropriate action 2.3 Respond to communication problems
3. Respond to request for information	3.1 Acknowledge the request for information and clarify understanding 3.2 Access information from appropriate sources 3.3 Relay information to appropriate person or section in a manner appropriate for the receiver
4. Complete workplace forms	4.1 Select appropriate form 4.2 Assemble information required for form 4.3 Complete workplace form 4.4 Submit workplace form

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP102A Communicate in the workplace.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP102 Communicate in the workplace

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP102A Communicate in the workplace.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- received, recorded and relayed messages, including:
  - listening attentively and asking questions to confirm understanding
- responded to at least one request for information in accordance with procedures, including:
  - using clear and concise language in both verbal and written communication
- completed workplace forms legibly and accurately

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- sources of information
- communication equipment
- organisation procedures, including:
  - telephone and communications protocols and/or procedures
  - documentation and record keeping
- types and meaning of workplace codes, numbers, symbols, signs and colours typically used in the work environment
- types, purpose and importance of workplace documentation
- workplace expectations for acceptable language and tone, including swearing, level of formality, courteousness and respect for diversity
- challenges in communicating with people from culturally and linguistically diverse (CALD) backgrounds in the workplace and possible strategies
- communication problems and corrective actions relevant to own role
-

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - workplace documentation and/or information
  - workplace forms.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMSUP106 Work in a team

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP106A Work in a team.

Application

This unit describes the skills and knowledge required to organise own activities within a team to fit with work schedules and to meet operational guidelines.

This unit applies to team members who are required to use interpersonal and communication skills to plan, organise and complete their work activities according to instructions and with limited discretionary powers.

This unit applies to all work environments.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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 work activities	1.1 Identify task requirements of the team 1.2 Identify own tasks that are part of the team requirement 1.3 Prioritise team and individual activities as directed
2. Organise daily work	2.1 Break work activities down into small achievable components

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
plan	2.2 Record activities as required by procedures 2.3 Seek assistance from other team members when difficulties in achieving allocated tasks arise
3. Participate in a team	3.1 Use communication and interpersonal skills to ensure effective teamwork 3.2 Acknowledge information and feedback provided by other team members in work group 3.3 Acknowledge team roles and support team members in achieving their role

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP106A Work in a team.

Links

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Assessment Requirements for MSMSUP106 Work in a team

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP106A Work in a team.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- participated in at least 1 work team to achieve allocated tasks
- used communication and interpersonal skills with:
  - team members
  - team leaders
  - supervisors.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisation procedures, including:
  - record keeping requirements
- own role in team and meeting team requirements and the role of other team members, team leaders and supervisors
- organisation work standards and how the team contributes to them
- interpersonal and communication techniques that promote effective teamwork including:
  - listening
  - questioning
  - paraphrasing
  - non-verbal communication
  - giving and receiving feedback.
  -

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies, as well as, using suitable facilities, equipment and resources.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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MSMSUP200 Achieve work outcomes

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP200A Achieve work outcomes

Application

This unit of competency covers the skills and knowledge required to identify and implement actions to achieve workplace targets and to suggest ways to improve processes.

This unit of competency applies to personnel who are required to achieve quality standards and productivity targets within the scope of own job.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other team members and supervisors.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Identify key** aspects **of the process**	1.1	Outline the properties of materials/components used in the process
		1.2	Describe the process relevant to own work area

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		1.3	Identify the safety and environmental requirements relevant to this process
		1.4	State aspects of this process which require careful monitoring
2	**Implement actions to achieve targets**	2.1	Identify production targets for own work area and work role
		2.2	Describe techniques used to measure performance against workplace targets/standards
		2.3	Identify factors impacting on achieving targets
		2.4	Identify potential inefficiencies in the process
		2.5	Achieve work outcomes
3	**Participate in an improvement activity in accordance with organisation procedures**	3.1	Investigate a problem
		3.2	Identify likely causes of problem
		3.3	Suggest options for improvement
		3.4	Discuss a proposed improvement with appropriate people

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.

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- non-routine process and quality problems
- equipment selection, availability and failure
- teamwork and work allocation problems
- safety and emergency situations and incidents

Known solutions are drawn from one or more of:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP200A Achieve work outcomes

Links

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Assessment Requirements for MSMSUP200 Achieve work outcomes

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP200A Achieve work outcomes

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 must include the ability to:

- identify workplace targets and performance measures
- identify and minimise inefficiencies
- identify and control hazards
- work to achieve targets
- apply known solutions to routine problems
- participate in process improvement teams/activities.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including relevant standard operating procedures (SOPs)
- potential sources of wastage/production inefficiencies
- process, normal operating parameters and product quality to recognise non-standard situations
- criteria for evaluating and selecting improvements, including:
  - benefits
  - costs
  - safety implications
  - limitations of equipment, process and materials.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include participation in an improvement activity which provides sufficient evidence of the requirements of all the elements and performance criteria
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP204 Pack products or materials

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP204A Pack products or materials

Application

This unit of competency covers the skills and knowledge required to package products and/or materials to prepare them for despatch, warehousing or storage.

It applies to operators who are required to identify packaging requirements, use technology to package the goods and complete labelling and documentation. It covers the packaging of liquids or particulate solids, drums and semi-bulk containers, and so on.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency includes the operation of all relevant ancillary equipment, such as pumps, valves, scales and other equipment integral to the packing operation.

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

The person undertaking this role may require licences to cover the operation of forklift trucks or other regulated load shifting devices. Licensing or certification may be required by the local Worksafe or other regulatory authority.

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Prepare goods/materials for packaging	1.1	Interpret packaging specifications
		1.2	Interpret order packaging documentation
		1.3	Select appropriate technology for packaging goods/materials
		1.4	Identify packaging materials and match specifications
		1.5	Identify and control hazards
2	Package finished products or materials	2.1	Identify the nature of the product or material and the particular handling requirements
		2.2	Conduct process according to production specifications and organisational procedures
		2.3	Identify potential problems and required action/solution
		2.4	Conduct equipment start-up and run operation as necessary
		2.5	Employ ancillary equipment, as necessary, and use safe working procedures
3	Stack, label and store finished products or materials	3.1	Find out delivery, storage and location requirements in accordance with procedures
		3.2	Label or mark products or materials following workplace labelling standards
		3.3	Set up work area and handling and storage equipment taking account of safety and efficiency
		3.4	Store products where required making safe and efficient use of storage space

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		3.5	Complete workplace records/documentation
		3.6	Attach invoices and picking slips (where required)
4	Clear work area	4.1	Store unpacked products, products for packaging and handling equipment in appropriate areas
		4.2	Clean equipment and make ready for re-use
		4.3	Clean work area, making it safe and ready for the next user
		4.4	Report and document equipment faults

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.

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Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Documentation, labels and records

Documentation, labels and records include:

- any information and data in relation to despatch, receipt, movement and storage of goods whether it is manual, paper-based, electronic or verbal, either in person or by phone/radio, and includes one or more of the following:
  - order requests
  - invoices
  - picking slips
  - labels
  - transportation requirements
  - bills of materials
  - inventory lists
  - databases

Tools and equipment

Tools and equipment include one or more of the following:

- mobile plant/fork lifts
- manual handling equipment
- hand tools
- shrink wrappers
- tape machine labellers
- loose bulk packing equipment
- computers, bar code readers
- bag filling equipment
- pallets
- wrapping machines
- personal protective equipment (PPE)

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- distribution equipment, such as A-frames, stillages, containers, elevated platforms and communication equipment

Hazards

Hazards include one or more of the following:

- inappropriate movements and postures
- humidity, air temperature and radiant heat
- manual handling hazards
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- equipment malfunctions
- product specifications
- handling specifications
- insufficient space
- unusual size, shape or mass of products or materials
- insufficient goods to complete order

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- conflicting priorities
- incomplete or incorrect paperwork

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP204A Pack products or materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP204 Pack products or materials

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP204A Pack products or materials

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 must include the ability to:

- identify and interpret the packaging requirements
- select and use the appropriate technology and equipment for packaging
- label and store the goods
- select and use handling equipment
- apply known solutions to routine problems
- read and interpret product specifications, job sheets, procedures, material labels and safety information
- complete documentation and records
- apply appropriate safety precautions and procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - safety, emergency and hazard control
  - inventory and ordering systems
- types and application of handling equipment and any licensing requirements
- manual handling techniques and ergonomics relevant to the job
- safe storage of dangerous goods and hazardous materials relevant to the materials handled
- production work flow requirements for packaging.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP205 Transfer loads

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP205A Transfer loads

Application

This unit of competency covers the skills and knowledge required to move loads using cranes and gantries.

It applies to operators who are required to plan and apply the correct method to secure and move the goods safely without damage to the goods, personnel or equipment.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all sectors of the industry.

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

The person undertaking this role may require licences to cover the operation of forklift trucks or other regulated load shifting devices. Licensing or certification may be required by the local Worksafe or other regulatory authority.

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Plan operation	1.1	Correctly identify products, goods or material to be relocated
		1.2	Identify load characteristics, including mass, volume, shape, balance and dimensions
		1.3	Identify most efficient and appropriate piece of equipment to be used
		1.4	Estimate points of balance
		1.5	Consider effect of moving contents which may be loose, liquid, dangerous or hazardous
		1.6	Determine location of storage
		1.7	Carry out risk analysis for job
		1.8	Complete required hazard controls
		1.9	Identify most efficient and appropriate movement route
2	Prepare for lift	2.1	Select appropriate lifting equipment
		2.2	Check and test lifting gear as required
		2.3	Calculate safe working load (SWL) or working load limit (WLL)
		2.4	Clarify any non-standard requirements
		2.5	Report and replace any unsafe lifting gear
		2.6	Secure movable/loose parts of load
		2.7	Attach load suitable for transfer

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3	Transfer load	3.1	Prepare load destination to accept load
		3.2	Move load safely to required destination in accordance with planned procedure
		3.3	Use standard communication signals to coordinate safe movement of the load
		3.4	Remove equipment/gear/accessories safely from load
		3.5	Inspect equipment/gear/accessories for wear and damage, and clean, maintain, store and record usage and condition
		3.6	Complete site/job records
4	Respond to routine problems	4.1	Monitor transfer frequently and critically throughout load shifting using measured/indicated data and senses (e.g. sight and hearing) as appropriate
		4.2	Recognise transfer problems
		4.3	Identify and take action on causes of routine problems
		4.4	Log problems as required
		4.5	Identify non-routine process and quality problems and take appropriate action

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.

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Communication signals

Communication signals include one or both of the following:

- hand signals
- radio/voice

Tools and equipment

Tools and equipment include one or more of the following:

- cranes and gantries
- slings, ropes, chains or nets
- block and tackle
- shackles, bolts or turnbuckles
- jemmy bars
- spreader beams
- equalising gear
- clamps
- pulley systems

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- winches
- packs
- rigging screws
- relevant personal protective equipment (PPE)

Hazards

Hazards include one or more of the following:

- unpredicted movement of loads
- loose goods
- volatile or hazardous materials and products
- irregular shaped loads
- unlabelled goods, materials and products
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Hazard controls

Hazards controls include one or more of the following:

- obtaining a permit to work
- determining coordination requirements with other site personnel
- determining job method to include hazard prevention and controls
- applying Australian Standards for safety procedures, codes of practice and manufacturer specifications

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- erecting barricades, warning signs and overhead protection to requirements

Checking lifting gear

Checking lifting gear includes:

- checking pulleys and block and tackle for safe operation and load capacity
- checking ropes, cable, net and chain systems before use for safe condition and conformity to specification
- conducting testing of ropes, cable, net and chain system when required to ensure safe operating capacity
- checking sling material for conformity with equipment and safety requirements

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- variations in load capacities of various sling materials
- frayed or damaged slings
- bolt or shackle failure
- lifting equipment failure

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP205A Transfer loads

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Links

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Assessment Requirements for MSMSUP205 Transfer loads

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP205A Transfer loads

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 must include the ability to:

- plan and prepare for the safe relocation of goods based on load characteristics, risk analysis, equipment to be used and calculation of load limits
- select and use equipment to lift and transfer load and perform pre and post-checks
- apply known solutions to routine problems
- complete documentation and records
- communicate effectively to clarify requirements, report problems and coordinate safe movement of the load.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - safety, emergency and hazard control
- types, application and capacity of load shifting equipment and any licensing requirements
- hazards that may arise in load transfer, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls.
  -

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP210 Process and record information

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Foundation skills specified. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP210A Process and record information.

Application

This unit describes the skills and knowledge required to process information and respond to the information requirements of own job, including the completion of workplace documents, and clearly and concisely providing relevant information to others.

This unit applies to personnel who are required to identify routine information requirements, access and process information, provide workplace and technical information within their area of expertise and complete workplace documentation. Information will be conveyed orally and in writing.

This unit applies to all work environments.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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. Access information	1.1 Identify the need for information 1.2 Request appropriate information

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Access information in accordance with procedures 1.4 Comply with security procedures in accessing appropriate information
2. Provide appropriate information	2.1 Deal with enquiries promptly and courteously 2.2 Confirm details of enquiry by questioning and summarising 2.3 Organise information clearly, concisely and logically 2.4 Provide information relevant to request in a timely manner and in a form that is appropriate and easily understood 2.5 Redirect enquiries to relevant personnel for resolution where outside the own area of responsibility
3. Give and follow routine instructions	3.1 Give accurate, clear and concise instructions that are appropriate for the receiver 3.2 Interact with others in an efficient, effective, responsive, courteous and supportive manner 3.3 Confirm that instructions are understood 3.4 Follow prescribed and routine work-related sequences
4. Provide reports	4.1 Complete all workplace documentation and reports clearly and accurately 4.2 Report all relevant information clearly and concisely

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Reading skills to interpret workplace information.
- Writing skills to complete workplace documents and reports.
- Oral communication skills to interact with others and provide information.

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

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Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP210A Process and record information.

Links

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Assessment Requirements for MSMSUP210 Process and record information

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Foundation skills specified. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP210A Process and record information.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- processed and recorded workplace and technical information in response to at least 1 enquiry.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisational procedures, including those covering:
  - data systems and data security
  - record keeping
  - privacy
  - intellectual property (IP)
  - use of internet
- types and meaning of workplace codes, numbers, symbols, signs and colours typically used in the role or work environment
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - workplace documentation, forms and reports
  - workplace record keeping, privacy and data security procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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MSMSUP240 Undertake minor maintenance

Modification History

Release 2. Equivalent. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP240A Undertake minor maintenance.

Application

This unit describes the skills and knowledge required to undertake minor maintenance and solve routine problems to procedures. Minor maintenance can include operational maintenance, general cleaning, part removal and part replacement and other activities that do not require a trade qualification.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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 maintenance requirements	1.1 Identify equipment variations and/or irregularities using observed data and plant records 1.2 Assess the urgency and priority of the situation 1.3 Identify appropriate corrective action 1.4 Identify correct tools and materials 1.5 Assess the impact of the maintenance activity and communicate to

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	appropriate personnel 1.6 Identify hazards and risk controls 1.7 Identify work permit requirements
2. Prepare for maintenance activity	2.1 Ensure equipment is turned off and isolated according to procedures 2.2 Clear the area of obstructions and hazardous materials 2.3 Obtain appropriate tools, parts, materials and procedures 2.4 Obtain the appropriate work permits and adhere to the requirements 2.5 Communicate the impending maintenance activity to the appropriate personnel
3. Perform maintenance activity	3.1 Access all relevant information 3.2 Undertake maintenance activity according to procedures 3.3 Use tools and maintenance techniques correctly 3.4 Restore equipment to normal working condition 3.5 Leave the work area in a clean and safe condition 3.6 Ensure permits are signed-off as appropriate
4. Test equipment	4.1 Test equipment according to procedures 4.2 Return equipment to service 4.3 Ensure equipment meets normal operating requirements
5. Record maintenance activity	5.1 Complete maintenance logs and/or plant history records 5.2 Report maintenance activity to relevant personnel 5.3 Identify and report outstanding maintenance requirements to relevant personnel

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.

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Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP240A Undertake minor maintenance.

Links

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Assessment Requirements for MSMSUP240 Undertake minor maintenance

Modification History

Release 2. Equivalent. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP240A Undertake minor maintenance.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- undertaken at least 1 minor maintenance activity, including:
  - using available data and records to recognise fault and no-fault conditions in standard and non-standard situations
  - applying operational guidelines and known solutions to correct variations and/or irregularities
  - applying approved hazard control, work permit and safety procedures.
  -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of operation of the equipment to be maintained
- function and troubleshooting of major internal components and their problems
- appropriate testing procedures and use of equipment for a range of equipment faults
- typical causes of equipment failures and the service conditions which may increase maintenance
- types and nature of maintenance (preventative, predictive, corrective) uses, benefits and limitations
- factors that may affect product quality or production output and appropriate remedies.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:

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- maintenance documentation, guidelines, procedures and schedules, including data and plant records
- maintenance tools and equipment, including personal protective equipment (PPE).

Links

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MSMSUP273 Handle goods

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP273A Handle goods

Application

This unit of competency covers the skills and knowledge required to receive and despatch products and/or materials from either internal or external sources as an adjunct to the job of making product.

It applies to operators who are required to receive and process orders, maintain records, identify and select goods to be despatched and ensure they are despatched to the correct location.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency focuses on processing goods to be despatched and/or received. The person undertaking this role may require additional competencies to cover the operation of forklift trucks or other regulated load shifting devices.

This competency is NOT intended for people who, as a major function, operate a store or warehouse. For these people warehousing units of competency should be used.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Identify work requirements**	1.1	Read and interpret documentation
		1.2	Identify required schedules for receipt or despatch
		1.3	Identify correct product/material
		1.4	Identify potential problems and required action/solution
		1.5	Plan work sequence using workplace and product knowledge
		1.6	Select appropriate materials handling equipment as required
		1.7	Identify work health and safety (WHS) requirements
2	**Prepare for receiving or despatching goods**	2.1	Select and check goods for receiving/despatch against product/material knowledge, labels and other identification systems
		2.2	Sort, assemble and consolidate products as necessary
		2.3	Secure order and place in storage areas in accordance with schedule
		2.4	Check order against receiving/despatch schedule and order form
3	**Move materials into/out of storage or to/from production**	3.1	Check paperwork and identity of materials
		3.2	Check for completeness and/or damage
		3.3	Take action on non-conforming products/materials
		3.4	Move products/materials safely
		3.5	Store materials safely as required

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		3.6	Resolve routine problems that arise in accordance with procedures
4	**Complete materials movement records**	4.1	Complete materials movement records (in or out)
		4.2	Update records as required
		4.3	Complete other paperwork and records as required

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:

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- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Documentation and records

Documentation and records include:

- any information and data in relation to despatch, receipt, movement and storage of goods whether it is manual, paper-based, electronic or verbal, either in person or by phone/radio, and includes one or more of the following:
  - order requests
  - invoices
  - picking slips
  - labels
  - transportation requirements
  - bills of materials
  - inventory lists
  - databases

Tools and equipment

Tools and equipment include one or more of the following:

- mobile plant/fork lifts
- manual handling equipment
- hand tools
- shrink wrappers
- tape machine labellers
- loose bulk packing equipment
- computers and bar code readers
- bag filling equipment
- pallets
- wrapping machines
- personal protective equipment (PPE)
- distribution equipment, such as A-frames, stillages, containers, elevated platforms and communication equipment

Hazards

Hazards include one or more of the following:

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- inappropriate movements and postures
- manual handling hazards
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- special storage requirements, including moisture and contamination control
- compatibility of goods in loads and in storage
- handling of incomplete loads (either in or out)
- handling of materials which do not meet specifications
- conflicting priorities
- incomplete or incorrect paperwork
- product requirements
- job priority
- product/material variations

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP273A Handle goods

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP273 Handle goods

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP273A Handle goods

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 must include the ability to:

- identify and select goods to be moved in accordance with documentation
- apply known solutions to routine problems
- prepare and organise goods to be moved to fit with schedules
- select and use handling equipment
- read and interpret product specifications, job sheets, procedures, material labels and safety information
- complete documentation and records
- apply appropriate safety precautions and procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - safety, emergency and hazard control
  - inventory and ordering systems
- types and application of handling equipment and any licensing requirements
- manual handling techniques and ergonomics
- safe storage of dangerous goods and hazardous materials
- transport requirements and restrictions for products/materials
- production workflow requirements.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must 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 for part but not all of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP280 Manage conflict at work

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP280A Manage conflict at work

Application

This unit of competency covers the skills and knowledge required to manage conflict in a range of personal conflict situations.

This unit of competency applies to personnel who are required to liaise and cooperate with other members of the team and to work towards finding common ground and opportunities for problem resolution. It applies to any interactions in the workplace, including interactions between co-workers, between staff and customer/client, and between staff and supervisor.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Identify potential sources of conflict**	1.1	Identify actions which are likely to promote a reaction in others
		1.2	Assess the other person's needs and/or concerns
		1.3	Assess own ability to respond to the other person's needs
		1.4	Recognise possible causes of conflict
		1.5	Identify potential conflict situations
2	**Identify range of alternative approaches**	2.1	Discuss with the other person their needs and concerns
		2.2	Identify own needs and concerns and discuss with other person
		2.3	Identify possible approaches through which the needs and concerns of both may be met
		2.4	Develop a range of alternative approaches for achieving goals
3	**Resolve conflicts**	3.1	Identify areas of common ground or objectives that can be mutually supported
		3.2	Agree on an approach which will meet the majority of objectives for both parties
		3.3	Implement the approach
		3.4	Check that the agreed requirements are being met and that conflict has been resolved
4	**Respond to problems**	4.1	Identify possible problems in the conflict management process
		4.2	Determine problems needing action
		4.3	Determine possible causes
		4.4	Rectify problem using appropriate solution within area

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of responsibility

4.5 Follow through items initiated until final resolution has occurred

4.6 Report problems outside area of responsibility to designated person

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.

Conflict

Conflict in the context of this unit refers to interpersonal conflict and may arise in any work-related context.

Potential sources of conflict

Potential sources of conflict include conflicts arising from one or more of the following:

- different learning/problem solving styles
- different work or personal priorities
- different personality styles
- conflicting key performance indicators (KPIs), work goals or targets
- different social, cultural, religious or ethnic background or different gender of sexual preference
- different interpretation of requirements or ‘the rules’

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Approaches to resolving conflict

Approaches to resolving conflict will be based on direct communication and include one or more of the following:

- informal, face-to-face discussions
- formal/structured face-to-face discussions
- through the use of:
  - telephones and two-way radios
  - memos, faxes, letters or emails

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- anger or aggression arising from industrial relations matters
- disagreements over processes or work practices
- variations in opinions about circumstances or events
- interpersonal disputes arising from changes in personal circumstances

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP280A Manage conflict at work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP280 Manage conflict at work

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP280A Manage conflict at 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 and demonstrate the ability to:
- recognise situations, actions and verbal and non-verbal communication that indicate potential or actual conflict
- communicate about needs and concerns of self and others and areas of common ground using:
  - appropriate verbal and non-verbal communication
  - statements that focus on issues and facts, not people and personalities
  - accurate reflection of people's needs and concerns
- implement conflict resolution approach and monitor its success
- apply known solutions to routine problems

manage conflict as it arises.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- likely sources of conflict in own job/workplace
- indicators of potential conflict
- communication approaches to resolving conflict
- conflict resolution skills relevant to own job/workplace.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will use one or a combination of:
    - totally off the job, in which case it will use case studies and role plays as well as questions
    - evidence drawn totally from performance in the workplace

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- 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

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MSMSUP291 Participate in continuous improvement

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP291A Participate in continuous improvement

Application

This unit of competency covers the skills and knowledge required to identify areas of improvement and work with colleagues to implement the changes.

It applies to operators who are required to contribute to continuous improvement of work processes by applying knowledge of customers and suppliers to identify improvements and to select and implement improvements.

This unit of competency applies to an individual working as part of a team/work group.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Identify customers and suppliers**	1.1	Identify internal and external customers and suppliers
		1.2	Identify requirements of individual customers
		1.3	Identify own role in meeting customer requirements
2	**Identify areas for improvement**	2.1	Identify issues affecting output and quality
		2.2	Identify instances of variation
		2.3	Follow procedures for reporting and managing variations
		2.4	Record non-conformance in accordance with company requirements
3	**Identify strategies for improvement**	3.1	Identify areas for improvement
		3.2	Use information on variation to develop improvement suggestions
		3.3	Use relevant quality tools and techniques for identifying causes of variation and areas for improvement
		3.4	Suggest options for improvement
		3.5	Discuss a proposed improvement with others in a team
4	**Participate in a team to implement an improvement proposal**	4.1	Implement changes in system and procedures
		4.2	Monitor performance improvements
		4.3	Evaluate results of improvements with others in a team

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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.

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Opportunities for improvement

Opportunities for improvement include one or more of the following:

- an unintended occurrence or outcome
- product faults and faulty products
- excessive variation
- trends
- waste (muda)
- improving process capability
- improving process efficiency
- improving health safety and environment (HSE) outcomes
- reducing cost/lifecycle cost

Quality tools and techniques

Quality tools and techniques include one or more of the following:

- controls charts (statistical process control)
- cause-effect diagrams
- check sheets

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- histograms/Pareto charts
- scatter diagrams
- stratification
- flow charts

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP291A Participate in continuous improvement

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP291 Participate in continuous improvement

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP291A Participate in continuous improvement

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 relationship of own role to the needs of internal and external customers and suppliers
- identify variations and non-conformances
- follow procedures for reporting and managing variations and non-conformances
- communicate and work with others to:
  - analyse areas of variations and non-conformances to identify causes and develop strategies for improvements
  - implement changes to systems and procedures
  - evaluate whether changes have achieved improvements
- interpret quality data and graphs.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the use of information in developing improvements
- types and application of analytical problem-solving techniques
- organisation processes and approvals for making changes to systems and procedures
- quality tools and techniques.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and opportunity for improvement recognition and resolution. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate quality tools
  - may use industry-based simulation for part only of the unit (typically implementation) particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- 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

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MSMSUP292 Sample and test materials and product

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP292A Sample and test materials and product

Application

This unit of competency covers the skills and knowledge required to take routine samples and conduct simple tests.

This unit of competency applies to operators who are required to take samples in the workplace, perform a narrow range of simple tests and interpret the results and take specified action based on those results.

It applies to simple, routine tests to procedure which will typically be done in the workplace or in a ‘factory laboratory’ (or bench) adjacent to or within the factory.

This unit of competency is typically performed by operators working either independently or as part of a work team.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	Take sample	1.1	Determine type of sample and sampling equipment required
		1.2	Check sampling equipment is clean and in good order
		1.3	Take sample of required type, from the required place and at the required time and place in required container
		1.4	Label sample to procedure
		1.5	Carry sample to required place
2	Complete test	2.1	Check test required from procedures
		2.2	Check sample identification and integrity
		2.3	Check test equipment is clean, in good order and within calibration
		2.4	Complete test required in accordance with standard procedures/instructions
3	Interpret results and take action	3.1	Note anything about sample, equipment or the test itself which may have caused it to give a bad result
		3.2	Compare results to specification
		3.3	Take action appropriate to the test results and any other observations
4	Complete sample and test cycle	4.1	Complete required records
		4.2	Store and/or dispose of sample as required
		4.3	Clean all equipment and leave ready for next sample/test

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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:

- test methods
- sampling techniques
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- emergency procedures
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP292A Sample and test materials and product

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Assessment Requirements for MSMSUP292 Sample and test materials and product

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP292A Sample and test materials and product

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 must include the ability to:

- undertake collection and processing of sample
- select and use appropriate procedures
- undertake tests with adequate reproducibility
- check and clean equipment
- recognise suspicious test results caused by sampling/testing faults
- compare results to specifications and take appropriate action as defined in relevant procedures
- complete workplace forms, label samples and record results.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant procedures
- specifications for test results
- types and application of sample techniques and their requirements
- types and application of test methods and critical factors leading to good/poor test results

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems

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    - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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

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MSMSUP300 Identify and apply process improvements

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP300A Identify and implement opportunities to maximise production efficiencies.

Application

This unit covers the skills and knowledge required to identify, monitor and participate in strategies to improve production efficiencies.

This unit applies to all work environments and all operators across all functions, including experienced team leaders or supervisors, who are required to provide input into process improvement initiatives for a team or work area.

This unit applies to a wide range of processes and equipment. In large plants with multiple processes, it may apply to more than one process if those processes interact with each other.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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. Determine issues that affect process efficiency	1.1 Investigate issues affecting output and quality 1.2 Determine potential and/or actual sources of wastage 1.3 Identify or develop appropriate performance measurement indicators

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Identify hazards and required controls associated with the process
2. Monitor and measure process efficiency	2.1 Monitor performance of process or equipment or raw material usage 2.2 Identify variations and divergence from trends 2.3 Identify factors inhibiting process efficiency
3. Participate in developing strategies for improving process efficiencies	3.1 Analyse problems and areas for improvement in process efficiencies 3.2 Utilise appropriate problem-solving tools and techniques for identifying areas for improvement 3.3 Identify and take into account external factors 3.4 Identify required changes to process, standards and procedures 3.5 Recommend strategies for improvement to relevant personnel
4. Participate in applying process improvement strategies	4.1 Implement strategies to improve process efficiency 4.2 Monitor performance of changes 4.3 Evaluate results of changes 4.4 Report results to relevant personnel

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP300A Identify and implement opportunities to maximise production efficiencies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP300 Identify and apply process improvements

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMSUP300A Identify and implement opportunities to maximise production efficiencies.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified process efficiency issues, recommended improvements and contributed to the development, implementation and review of improvement strategies
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- duty of care
- organisation procedures
- information systems and data collation
- process inefficiencies
- measures of process efficiency
- problems and hazards that may arise in the work role and work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- relevant equipment and operational processes.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - workplace documentation, forms and production reports

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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MSMSUP301 Apply HACCP to the workplace

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP301A Apply HACCP to the workplace

Application

This unit of competency covers the skills and knowledge required to apply the hazard analysis and critical control point (HACCP) principles to the manufacture of products to be used in contact with food, beverages, pharmaceuticals or similar situations.

It applies to senior operators who are required to use a HACCP-based approach to analyse food, beverage or pharmaceutical safety risks, define controls and corrective action procedures, and ensure the system is working effectively.

The operator will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

HACCP is an internationally recognised systematic approach to identifying and controlling food and related safety hazards.

Related acronyms are used in this competency:

- CCP - critical control points
- CCF - critical control factors
- CCL - critical control limits
- HAT - hazard analysis table.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator as appropriate.

This unit of competency applies to all work environments and sectors within the industry where the product comes into contact with food, beverages or pharmaceuticals or otherwise requires 'food standards' to be maintained.

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

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Pre-requisite Unit

Nil

Competency Field

Support

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 a HAT to an existing process	1.1	Identify CCPs
		1.2	Recognise CCFs which are outside of or approaching CCLs
		1.3	Describe hazard related to CCFs and CCLs
		1.4	Implement corrective action in accordance with HAT
2	Develop/modify a HACCP	2.1	Conduct a hazard analysis
		2.2	Determine the CCPs
		2.3	Establish critical limits
		2.4	Establish/modify a system to monitor control of the CCPs
		2.5	Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control
		2.6	Establish procedures for verification to confirm that the HACCP system is working effectively
		2.7	Establish/modify documentation concerning all procedures and records appropriate to these principles and their application.

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3	Interpret HACCP/HAT to another worker	3.1	Explain the purpose and rationale of HACCP
		3.2	Identify CCPs, CCFs and CCLs
		3.3	Describe indicators of CCFs not within their CCLs
		3.4	Describe impact of non-conformances
		3.5	Demonstrate corrective action
		3.6	Monitor worker implementing HACCP in their job

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:

- Codex Alimentarius
- 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

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form, and include one or more of the following:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- biological
- chemical
- physical
- product contamination
- material contamination
- methods/routes of exposure and contamination

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems are unexpected problems, or variations of previous problems and include one or more of the following

- recognising CCFs approaching the CCLs
- determining corrective action from HAT
- applying HACCP principles to situations not directly covered by HAT
- recognising the need for a new/modified HACCP/HAT
- modifying HACCP/HAT to meet changes circumstances

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications

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- remembered experience
- relevant knowledge obtained from appropriate people

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP301A Apply HACCP to the workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP301 Apply HACCP to the workplace

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP301A Apply HACCP to the workplace

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:

- recognise HACCP/HAT issues and take appropriate corrective action
- analyse process and material variations in terms of the HACCP and determine appropriate actions
- apply HACCP principles to develop a new and/or modify and existing HACCP as part of a team
- communicate effectively with relevant personnel to convey technical information
- apply operational knowledge to non-routine problems
- write technical reports and HACCP/HAT tables
- interpret quantitative data, make comparisons and interpretations.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- 'seven principles' of HACCP
- importance of CCPs, CCFs and CCLs
- relevance of HAT to routine production
- impacts of variations in materials, process and product on HACCP.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of HACCP tools in the workplace

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    - may use industry-based simulation for part only of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- 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

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MSMSUP303 Identify equipment faults

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP303A Identify equipment faults

Application

This unit of competency covers the skills and knowledge required to plan and carry out checks to identify and deal with equipment faults and to determine solutions.

This unit of competency applies to experienced personnel, such as experienced operators, team leaders or supervisors, who are required to apply knowledge of materials, product purpose and processes to identify and deal with routine and non-routine faults in equipment, propose solutions, carry out solutions within scope of authority and competence and complete logs and reports.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments and sectors within the industry. It does not include maintenance that would require trade-level skills. It is not intended that this competency would cover maintenance that is carried out in a workshop.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify scope of operational check	1.1	Identify and classify equipment components and operating systems
		1.2	Match appropriate checks and procedures to the equipment operating systems
		1.3	Identify special checking procedures and parameters in manufacturer specifications and procedures
		1.4	Identify sources of information and data relevant to key variables
		1.5	Identify and control hazards
		1.6	Observe and undertake checks on the physical condition of equipment in accordance with procedures
		1.7	Record preliminary observations
		1.8	Discuss checking procedures with appropriate personnel and obtain necessary permission where required
2	Plan operational checks	2.1	Check specifications and notes from preliminary observations and identify areas to be clarified
		2.2	Plan sequence for checks, noting areas where results and observations should be recorded
		2.3	Ensure area is safe for operational check
		2.4	Make arrangements for any additional resources, including other employees
3	Check unit through full	3.1	Undertake operational checks observing relevant safety and operational requirements

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	operational range	3.2	Confirm results and findings
		3.3	Identify faults to be dealt with
4	Identify faults and formulate recommendations	4.1	Identify impact of faults on work schedule
		4.2	Record proposals for equipment repair based on faults found, cost/time implications and workplace approval systems
		4.3	Explain proposals to relevant workplace personnel, including any options and recommendations
		4.4	Take appropriate action to return equipment to full operation in accordance with procedures

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- plant description manuals
- manufacturer instructions and specifications
- service manuals
- machine circuit diagrams for hydraulic/pneumatic and electrical/electronic circuits
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include one or more of the following:

- hand tools specific for the task
- product testing equipment (e.g. flowmeter, scales, tape measure, micrometer, calliper and ultrasonic thickness)
- equipment checking equipment (e.g. vibration meter, tachometer, current tester, thermal imaging and temperature gauge)

Hazards

Hazards include one or more of the following:

- rotating and moving machinery
- process materials, solids, fluids and gases under pressure or flowing
- temporary connections or by-passes
- electrical, hydraulic or pneumatic energy sources
- out-of-specification operation
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures

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- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Faults

Faults may arise from routine and non-routine causes and must be resolved by applying operational knowledge to apply existing, or develop new solutions, either individually or in collaboration with relevant experts to:

- determine faults needing action
- determine possible fault causes
- develop solutions to faults which do not have a known solution
- follow through items initiated until final resolution has occurred
- report faults outside area of responsibility/expertise to designated person

Non-routine faults are unexpected faults, or variations of previous faults and are associated with one or more of the following:

- out-of-specification product or variations
- response of equipment to materials variations
- new or changed materials
- changed equipment settings (e.g. higher speed or throughput)
- equipment breakdown or in need of maintenance

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

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Variables

Key variables to be monitored include one or more of the following:

- equipment performance (e.g. speed, output and variations)
- equipment component performance
- sequences and timing of operations
- materials changes (desired and not desired)

Sources of information and data

Sources of information and data include one or more of the following:

- plant data
- log sheets
- operational and performance reports
- physical aspects, such as noise, smell, feel and pressure condition monitoring information
- planned maintenance schedules
- procedures

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP303A Identify equipment faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP303 Identify equipment faults

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP303A Identify equipment faults

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 must include the ability to:

- check and identify a fault within an item of equipment/plant
- ensure workplace is safe for checking and maintenance of equipment
- communicate effectively with personnel and all levels
- evaluate the impact of fault in terms of work schedule, cost/time and approvals needed and make recommendations for repairs
- apply operational knowledge to non-routine problems
- take appropriate action within scope of authority in accordance with procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including:
  - work permit systems
  - safety, emergency and hazard control
  - standard operating procedures (SOPs)
- hazards that may arise in the job/work environment, including:
- their possible causes
- potential consequences
- appropriate risk controls/ hierarchy of control
- principles of the operation of the equipment to be maintained:
  - operating principles for mechanical, hydraulic, pneumatic and electrical/electronic systems
  - functions and troubleshooting of internal components and their problems
  - routine and non-routine causes of equipment failures and the service conditions which may increase maintenance
- types and application of testing procedures and equipment.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP309 Maintain and organise workplace records

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP309A Maintain and organise workplace records

Application

This unit of competency covers the skills and knowledge required to maintain workplace records in paper, electronic or other form. Sample products or materials for testing or quality purposes may also form part of the records system.

This unit of competency applies to personnel who are required to process records, track location of records, apply security controls and respond to requests for information.

Work is governed by established workplace procedures and extent of authority for adjustments and other work activities are defined.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify records to be stored	1.1	Classify records to be maintained in relation to customer requirements, quality system or production requirements
		1.2	Identify requirements for completion of workplace records in accordance with workplace procedures
		1.3	Record and collate information ensuring appropriate information and any samples are included in an appropriate manner
2	Maintain filing arrangements	2.1	Identify organisation system for records
		2.2	Categorise and file records following workplace conventions
		2.3	Deal with obsolete or non-conforming records following workplace procedures
		2.4	Identify problems and take appropriate action
3	Respond to information requests	3.1	Interpret requests for information and prioritise
		3.2	Locate and provide information requested within required workplace policies and timeframes
		3.3	Collate information as required according to procedures
4	Organise file movements	4.1	Identify files to be relocated
		4.2	Confirm logistics of relocation
		4.3	Ensure files are relocated as organised
		4.4	Complete records of movement and file following

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			workplace procedures
5	Maintain security of workplace records	5.1	Identify security requirements for workplace records
		5.2	Maintain security arrangements for files
		5.3	Notify (any) security breaches to appropriate personnel

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)

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- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Records

Records will be specified in the organisation's record keeping processes and procedures and include one or more of the following:

- hard copy, such as documents, images, reports and forms
- electronic, such as documents, images, reports, forms, databases and spreadsheets
- physical, such as samples of products or materials

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems are unexpected problems, or variations of previous problems and include one or more of the following:

- lost files
- misfiling
- poor controls
- insufficient space/storage facilities
- incorrect destruction of records

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP309A Maintain and organise workplace records

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP309 Maintain and organise workplace records

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP309A Maintain and organise workplace records

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 must include the ability to:

- collate and file information, records and related materials according to record keeping, filing and security requirements
- prioritise and respond to requests for information from records and/or files to be relocated
- identify and locate records
- apply operational knowledge to non-routine problems
- complete workplace forms and records
- read and interpret procedures, work instructions, forms and records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - data systems and data security
  - record keeping
  - privacy
  - intellectual property (IP)
- record retention schedules and record destruction procedures.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must include the use of appropriate equipment/systems requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP310 Contribute to the development of workplace documentation

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP310A Contribute to the development of plant documentation

Application

This unit of competency covers the skills and knowledge required to develop workplace documentation in response to identified information requirements. Develop covers ‘develop from scratch’ or ‘take existing and improve’.

This unit of competency applies to experienced operators, leading hands, supervisors and similar personnel who are required to determine what needs to be done, develop the existing or new workplace documentation and apply document control.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other team members as appropriate.

This unit of competency applies to all work environments and sectors within the industry.

Work is governed by established workplace procedures, and extent of authority for drafting/document approval.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify information need/ deficiency	1.1	Determine the information needs of the organisation
		1.2	Evaluate current documentation
		1.3	Recognise information need/deficiency
		1.4	Discuss information needs with appropriate personnel
		1.5	Identify purpose of, and target audience for, documentation
2	Develop workplace documentation	2.1	Specify information need and set/prioritise objectives
		2.2	Analyse existing documentation/records for compliance with identified needs
		2.3	Develop draft documentation in required format
		2.4	Issue draft documentation to appropriate personnel for review
		2.5	Edit documentation and amend in accordance with review feedback
		2.6	Complete documentation to satisfy the initial identified need/deficiency
		2.7	Check document complies with required template and document control procedures
3	Communicate changes to workplace documentation	3.1	Explain need for revised/new documentation to all relevant personnel
		3.2	Distribute documentation to all appropriate personnel
		3.3	Evaluate effectiveness of documentation.

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3.4 Amend documentation if required

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:

- document control procedures and style sheets
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Documentation Documentation includes one or more of the following:

- maintenance logs
- non-compliance reports
- incidence and accident reports
- permits
- schematics/process flows/engineering drawings
- job cards
- SOPs
- work instructions
- operating manuals
- quality procedures
- training program contents
- material safety data sheets (MSDS)

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP310A Contribute to the development of plant documentation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP310 Contribute to the development of workplace documentation

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP310A Contribute to the development of plant documentation

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:

- communicate with other personnel to:
  - determine the need for and purpose of documentation development and/or amendment
  - identify specifications and format to be used
  - identify target audience
  - communicate and evaluate changes to documentation
- identify and evaluate current documentation
- convey information clearly and concisely in writing using language and structure suitable for the purpose and target audience
- apply procedures for drafting, review and revision of documentation
- apply document control.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - data systems and data security
  - record keeping
  - privacy
  - intellectual property (IP)
  - document control and approvals
  - style guides and standards for documentation
  - use of internet
  - relevant standard operating procedures (SOPs)
- writing styles, including:
  - plain or technical English
  - short/simple sentences, or well developed arguments
  - dot points or use of paragraphs
  - appropriate inclusion of graphics

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- sections and headings or other navigational tools
- logical sequencing of information
- distinguishing between relevant and peripheral issues
- planning, drafting and editing own work.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from work activities, which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should occur in operational workplace situations. Where this is not possible or practical assessment must occur in a sufficiently rigorous simulated environment reflecting 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.
- Assessment may use industry-based simulation for all or part of the unit where the use of real experience is not practicable.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - 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

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MSMSUP330 Develop and adjust a production schedule

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP330A Develop and adjust a production schedule

Application

This unit of competency covers the skills and knowledge required to plan, schedule and prioritise production to meet operational requirements.

This unit of competency applies to experienced operators, team leaders or similar who are required to optimise plant production and costs of production using daily and weekly run plan guidelines/production schedules.

The person will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify resources to meet production requirements	1.1	Determine demand for product
		1.2	Access and verify information on orders, stocks and delivery
		1.3	Determine plant/production equipment capacity
		1.4	Determine material requirements
		1.5	Determine human resource requirements
		1.6	Identify and control hazards
2	Develop schedules	2.1	Determine production priorities
		2.2	Identify production opportunities ('windows')
		2.3	Develop production schedules in accordance with procedures taking account of health, safety and environment (HSE) requirements
		2.4	Communicate and distribute production schedules to appropriate personnel
3	Monitor production schedules	3.1	Monitor production output against schedule
		3.2	Identify variations between production and schedule
		3.3	Record operational variation and discuss with appropriate personnel
		3.4	Identify possible cause of variation
4	Adjust schedules	4.1	Adjust schedules in response to operational variation

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4.2 Adjust schedules in response to unexpected events

4.3 Distribute adjusted/amended schedules to appropriate personnel

4.4 Maintain product output in accordance with production and HSE requirements

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

All operations are subject to stringent 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,

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and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards Hazards include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP330A Develop and adjust a production schedule

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Assessment Requirements for MSMSUP330 Develop and adjust a production schedule

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP330A Develop and adjust a production schedule

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 must include the ability to:

- identify production objectives, priorities, targets and resource requirements
- plan, sequence and schedule production taking account of health, safety and environment (HSE) priorities
- monitor and adjust schedules in response to operational variations
- communicate effectively with other personnel.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures
- hazards that may arise in the job/work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
  - hierarchy of control
- customer and quality requirements
- routine and non-routine causes of production variation
- relevant equipment and operational processes
- types of adjustments that can be made and their likely impact on process/plant efficiencies and production outcomes/targets.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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    - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
    - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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.

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MSMSUP382 Provide coaching/mentoring in the workplace

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP382A Provide coaching/mentoring in the workplace.

Application

This unit describes the skills and knowledge required to establish and provide one-to-one coaching and/or mentoring in the workplace and evaluate its effectiveness.

This unit applies to senior operators, team leaders or personnel who have significant workplace experience and who are required to use interpersonal skills to provide coaching and mentoring within their area of expertise to assist an employee to identify and meet his/her development needs.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit applies to all work environments.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Support

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. Establish coaching or mentoring relationship	1.1 Identify areas for development in line with organisation and individual's requirements 1.2 Use effective communication styles to develop trust, confidence and

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	rapport 1.3 Discuss and clarify expectations and goals 1.4 Agree together on how the relationship will be conducted 1.5 Seek input from other relevant personnel
2. Provide coaching or mentoring support	2.1 Assist the individual to identify and evaluate opportunities to achieve agreed goals and development activities 2.2 Share personal experiences and knowledge with the individual to assist in progress to agreed goals and development 2.3 Provide a supportive environment to allow the individual to develop towards the achievement of goals 2.4 Encourage the individual to make decisions and take responsibility for the courses of actions or solutions under consideration 2.5 Provide assistance and guidance in a manner which allows the individual to retain responsibility for achievement in their goals 2.6 Identify problems inhibiting the individual from achieving their goals and take appropriate action
3. Evaluate effectiveness of coaching or mentoring	3.1 Monitor the relationship and progress of the individual 3.2 Recognise and openly discuss changes in the coaching or mentoring relationship 3.3 Make adjustments to the relationship to take account of the needs of both the mentor or coach and the individual 3.4 Seek feedback from individual and other relevant personnel to identify and implement improvements

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.

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Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP382A Provide coaching/mentoring in the workplace.

Links

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Assessment Requirements for MSMSUP382 Provide coaching/mentoring in the workplace

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP382A Provide coaching/mentoring in the workplace.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- provided coaching or mentoring to at least 1 individual, including using interpersonal skills to:
  - build rapport, trust and respect with individual
  - facilitate identifying the individual's development goals
  - facilitate identifying solutions and actions
  - encourage and support the individual to develop towards the achievement of goals
  - assist the individual to make decisions about achieving goals
- evaluated outcomes of coaching process to ensure the individual is achieving goals.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- types of interpersonal skills and application to coaching and mentoring, including:
  - building rapport, trust and respect
  - verbal and non-verbal communications
  - questioning, listening and reflecting
  - self-disclosure
  - giving and accepting feedback
  - establishing a safe environment for open communication
- relevance and application of skills development techniques, including:
  - one-on-one training using explanation and demonstration
  - use of supporting materials in written, visual or other format
  - facilitation and guidance of self-directed learning
  - identifying needs and setting goals
- sources of information for self-directed learning, including:

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    - networking
    - industry journals
    - internet
    - organisation knowledge, learning systems and databases
- relevant career paths and competency standards in the organisation.
- relationship issues requiring Agreement:
    - the amount of time involved for both parties
    - confidentiality of information
    - identification of development opportunities
    - development plan towards achieving goals
- problems that can inhibit the individual from achieving their goals:
    - interpersonal skills
    - communication skills
    - technical skills
    - foundation skills
    -

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies, as well as, using suitable facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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MSMSUP383 Facilitate a team

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP383A Facilitate a team

Application

This unit of competency covers the skills and knowledge required to facilitate team communications and performance to achieve its goals.

This unit of competency applies to team leaders or similar roles within a team structure who are required to facilitate processes to identify team goals and timelines, plan and organise activities, support performance and resolve conflicts.

This unit of competency requires the use of a range of well-developed skills requiring some discretion and judgement to recognise and resolve a range of problems.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Identify tasks to achieve team goals**	1.1	Identify and agree on team goals with team members input
		1.2	Identify tasks required to achieve team goals
		1.3	Identify team and individual safety responsibilities
		1.4	Allocate responsibilities of individuals within the team
		1.5	Ensure designated team goals are met by identifying strategies and timelines required to complete each task
2	**Organise allocation of tasks**	2.1	Estimate time and resources needed to complete tasks
		2.2	Identify competencies of individual team member and allocate/negotiate individual responsibilities
		2.3	Agree timelines for completion of each task
		2.4	Identify resources and support necessary for completion of job
3	**Monitor completion of allocated tasks**	3.1	Measure team performance against its goals
		3.2	Monitor individual compliance with procedures and take action as required
		3.3	Check at regular intervals, and apply judgement to determine whether agreed timelines for completion of tasks will be met
		3.4	Negotiate alternative strategies, within delegated discretion, to achieve allocated tasks when designated timelines are not being met
		3.5	Provide support to colleagues to ensure completion of allocated tasks
4	**Resolve team problems**	4.1	Identify problem situations for team
		4.2	Identify causes of problem
		4.3	Implement problem resolution procedures relevant to the problem and to established practices

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4.4 Seek assistance as required to ensure problem resolution

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Identifying

Team goals will be identified from workplace documentation, including one

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team goals or more of the following:

- procedures
- material safety data sheets (MSDS)
- job cards
- maintenance logs
- plant drawings
- daily nominations
- tool box meeting
- sales/marketing request
- memos, faxes and emails identifying output or other goals

Problems Problems include one or more of the following:

- conflict between the team members
- conflict between different team goals
- current process capacity/capability will not allow achievement of goals
- conflict between work teams and/or the achievement of their goals
- availability of resources (people, time, plant/equipment, finances and materials)

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP383A Facilitate a team

Links

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Assessment Requirements for MSMSUP383 Facilitate a team

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP383A Facilitate a team

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:

- read and interpret workplace documentation to identify team goals
- use interpersonal skills to:
  - build rapport, trust and respect with individuals who have diverse work styles, aspirations, cultures and perspectives
  - facilitate team agreement on team and individual goals, timelines and allocation of tasks
  - encourage and support team members to work towards the achievement of goals
  - assist individual to make decisions about achieving goals
- facilitate processes to support team performance, including:
  - planning of team's activities
  - monitoring progress towards goals
  - taking corrective action
- identify and take appropriate action on problems and potential problems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types of interpersonal skills and application to team performance, including:
  - building rapport, trust and respect
  - verbal and non-verbal communication
  - questioning, listening and reflecting
  - giving and accepting feedback
  - establishing a safe environment for open communications
- impact of individual tasks on the completion of team objectives
- conflict resolution techniques
- capacity/capability of the equipment/process
- relevant equipment and operational processes
- targets and measures for production output and quality.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the appropriate demonstration of team facilitation using workplace situations, procedures and practices
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- 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.

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MSMSUP390 Use structured problem-solving tools

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools.

Application

This unit describes the skills and knowledge required to use structured process improvement tools to solve process and other problems. It describes the broad application of in-depth and rigorous structured problem-solving techniques to identify opportunities for improvement.

This unit applies to experienced operators, team leaders, supervisors or people in similar roles who are required to identify improvements and/or solve problems beyond those associated directly with the process unit and/or equipment.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments.

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

Pre-requisite Unit

Nil

Unit Sector

Support

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 the problem	1.1 Identify variances from desired operating and/or output parameters and quality 1.2 Define the extent, cause and nature of the problem by observation

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	and investigation 1.3 State and specify the problem clearly
2. Determine fundamental cause of problem	2.1 Select problem-solving tool appropriate to the problem and the context 2.2 Identify possible causes based on experience and the use of problem-solving tools and analytical techniques 2.3 Develop possible cause statements 2.4 Determine fundamental cause
3. Determine corrective action	3.1 Determine all possible options for resolution of the problem 3.2 Identify strengths and weaknesses of possible options 3.3 Determine corrective action to remove the problem and possible future causes 3.4 Develop implementation plans identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures 3.5 Develop recommendations for ongoing monitoring and testing
4. Communicate recommendations	4.1 Prepare report on recommendations 4.2 Present recommendations to appropriate personnel 4.3 Follow up recommendations

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP390 Use structured problem-solving tools

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified at least 1 problem
- analysed problem using at least 1 analysis tool drawn from each of 2 different groups of tools (basic, visual, process, business and organisation specific)
- selected the preferred solution
- developed and used an implementation plan, that includes:
  - specific, measurable, achievable, relevant, timed (SMART) objectives
  - resource requirements
  - methods for reaching objectives
  - timelines
  - methods of checking and adjusting adherence to plan
- communicated effectively with other personnel.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- relevant organisation procedures
- risks, risk assessment and controls relevant to problem being analysed
- targets and measures for output and quality
- types and application of problem-solving tools and analytical techniques
- relevant equipment and operational processes.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies, as well as, using suitable facilities, equipment and resources.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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MSMSUP400 Develop and monitor quality systems

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP400A Develop and monitor quality systems

Application

This unit of competency covers the skills and knowledge required to establish, implement, maintain and evaluate quality systems for a complete production area and/or plant.

This unit of competency applies to experienced technicians, leading hands, supervisors or people in similar roles who are required to develop quality procedures, processes and supporting documentation, ensure resources are available and evaluate and improve the system.

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.

This unit of competency applies to a wide range of processes and equipment in all work environments and sectors in manufacturing.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Establish and maintain framework for successful quality system**	1.1	Identify organisation goals and practices relevant to quality system
		1.2	Develop relevant procedures which demonstrate the commitment of the enterprise to quality and a culture of improvement
		1.3	Define and allocate responsibilities in quality system
		1.4	Consult with key personnel to define role of procedures in the quality system
		1.5	Seek financial and human resources to allow thorough implementation of quality system
		1.6	Develop system for communicating quality message and culture in the organisation
2	**Establish and maintain quality documentation system**	2.1	Identify quality documentation required, including records of improvement plans and initiatives
		2.2	Prepare and maintain quality documentation and keep data records
		2.3	Maintain document control system
3	**Implement structured training program in accordance with quality system requirements**	3.1	Analyse roles and duties of relevant personnel
		3.2	Identify training needs in relation to quality
		3.3	Identify training programs to meet these needs
		3.4	Arrange for the training program to be implemented
		3.5	Develop and maintain training records
4	**Evaluate the quality system**	4.1	Undertake regular audits of the quality system, its policies and procedures
		4.2	Develop new procedures/work instructions as required.
		4.3	Implement improvements in the quality system

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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:

- ISO 9000 Series, ISO 10000 Series (or other relevant standard)
- 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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Quality

The quality system must reflect the organisation’s goals, be compliant with

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system the relevant quality standard and include:

- quality plan
- quality management systems (QMS)
- roles and responsibilities of management and other personnel
- evaluating the QMS and continuous improvement

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMSUP400A Develop and monitor quality systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP400 Develop and monitor quality systems

Modification History

Release 1. Supersedes and is equivalent to MSAPMSUP400A Develop and monitor quality 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 and demonstrate the ability to:

- communicate with relevant personnel to:
  - identify resource requirements and training needs for the quality system
  - define and allocate roles
  - develop quality procedures and documentation
  - implement the quality system
- undertake audits of the system and implement improvements based on audit results
- write procedures and develop forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures, including those covering:
  - safety, emergency and hazard controls
  - standard operating procedures
  - record keeping
- business goals and key performance indicators (KPIs) and how they relate to quality system
- targets and measures for production output and quality
- relevant equipment and operational processes
- types and application of quality assurance and quality control mechanisms.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from work activities, which together provides sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.

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- Assessment may use industry-based simulation for all or part of the unit where the use of real experience is not practicable.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - 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

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MSMSUP404 Coordinate maintenance

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS404A Co-ordinate maintenance

Application

This unit of competency covers the skills and knowledge required to coordinate maintenance of a manufacturing facility.

It applies to experienced technicians, supervisors, maintenance coordinators or team leaders, working either independently or as part of a team. They will be required to apply knowledge of equipment operating principles, service requirements and workplace production operations to the coordination of maintenance activities to meet the objectives of restoring the plant/equipment condition, consistent with production requirements. They will not be required to actually do the maintenance.

This unit of competency applies to all work environments and sectors within the manufacturing industry. It applies to coordination of one or more of:

- predictive and preventative operational maintenance
- proactive maintenance
- reactive maintenance.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Plan maintenance	1.1	Develop work plans for scheduled routine maintenance activities
		1.2	Develop contingency plans for unscheduled maintenance activities
		1.3	Source maintenance providers (internal/external)
		1.4	Develop costings for maintenance work
		1.5	Identify and control hazards
		1.6	Document and record required production interruptions, processes and procedures
		1.7	Obtain required authorisations for the maintenance work
2	Organise maintenance	2.1	Schedule maintenance activities, with reference to production requirements and availability of resources
		2.2	Review available maintenance expertise and arrange appropriate training and assessment where necessary
		2.3	Obtain approvals for maintenance schedule as necessary to coordinate with production requirements
3	Assemble maintenance requirements	3.1	Determine resources required (equipment, personnel and consumables) to meet maintenance schedule
		3.2	Locate and coordinate supply of consumables, equipment and expertise to meet maintenance schedule
		3.3	Purchase equipment, consumables and expertise as required

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4	Complete maintenance	4.1	Complete maintenance schedule
		4.2	Make appropriate readings, measurements and recordings and compare to equipment, product and other relevant specifications
		4.3	Identify areas requiring further testing of plant, which has been subject to maintenance, and recommend appropriate procedures to supervisory staff
		4.4	Make appropriate adjustments to the maintenance schedule
		4.5	Complete records as required, noting areas where changes to equipment operation or routine maintenance are required

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.

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Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include one or more of the following:

- hand tools specific for the task
- testing equipment
- measuring and aligning equipment
- computer equipment
- relevant personal protective equipment (PPE)

Hazards

Hazards include one or more of the following:

- ineffective isolations of energy sources, motive power and process materials
- manual handling of machinery components
- hot, cold or components containing dangerous materials
- external hazards (e.g. traffic into a maintenance area)
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity

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- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Data and plant records

Data and plant records include one or more of the following:

- plant data
- log sheets
- operational and performance reports
- equipment performance (e.g. speed, output and variations)
- equipment component performance
- sequences and timing of operations
- materials changes (desired and not desired)
- physical aspects, such as noise, smell, feel and pressure condition monitoring information
- planned maintenance schedules
- procedures
- manufacturer specifications, instructions, service manuals and other information

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS404A Co-ordinate maintenance

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP404 Coordinate maintenance

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS404A Co-ordinate maintenance

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 must include the ability to:

- plan for maintenance requirements in standard and non-standard situations and determine appropriate action consistent with operation guidelines and regulatory framework
- identify and interpret information from a range of internal and external sources
- develop and adjust work plans for the maintenance activities
- coordinate resources to meet maintenance work plans
- communicate effectively with team/work group, supervisors and other personnel
- monitor work plans for maintenance activities**.**

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- characteristics and capabilities of relevant equipment, materials and processes
- functions and troubleshooting of internal components and their problems
- routine and non-routine causes of equipment failures and processes to develop solutions
- service conditions which may increase maintenance
- urgency and timeliness factors in planning maintenance activities in relation to production requirements
- proactive, predictive, preventative and reactive maintenance principles.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must include the coordination of maintenance in an appropriate industrial context
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP405 Identify problems in fluid power system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS405A Identify problems in fluid power system

Application

This unit of competency covers the skills and knowledge required to recognise and diagnose problems in hydraulic/pneumatic control systems on process equipment, and take appropriate corrective action.

This unit of competency applies to operators who are required to apply knowledge of fluid power systems and components to the identification and isolation of faults in equipment. The key factors are the diagnosis and the recommendation of action to resolve routine and non-routine faults in order to return the equipment to production.

The unit applies to all work environments and sectors within the manufacturing industry. It requires an understanding of the operation of all relevant equipment and processes but does not necessarily require them to be used personally.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify pneumatic/hydraulic system problems	1.1	Categorise the types of equipment malfunctions due to fluid power problems
		1.2	Identify the effects on product quality of fluid power problems
		1.3	Describe the function of components on the fluid power circuit diagram
		1.4	Identify possible faulty components from a circuit diagram
		1.5	Identify hazards arising from the problem and implement appropriate hazard control
2	Implement appropriate corrective action	2.1	Identify other possible problems
		2.2	Short list possible fault problems
		2.3	Investigation machine, products or data to determine most likely problem causes
		2.4	Take appropriate action to ensure problem is rectified
		2.5	Follow up on action to ensure completion in an appropriate timeframe
		2.6	Recheck after corrective action to ensure problem has been rectified
3	Develop maintenance requirements	3.1	Check manufacturer instructions to determine recommended maintenance schedule
		3.2	Check fault and maintenance history to determine adequacy of current regime and special requirements

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3.3	Determine criticality of machine to production/business
3.4	Develop maintenance schedule/requirements for machine
3.5	Liaise with all relevant stakeholders to ensure schedule is appropriate
3.6	Report outcome to appropriate personnel

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

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- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment using fluid power control systems

Equipment that uses fluid power control systems include one or more of the following:

- pumps
- pressure controls
- directional control valves (DCVs)
- remote operated valves (ROVs)
- flow control actuators
- accumulators
- filters
- heat exchangers
- proportional, servo and cartridge valves

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Hazards

Hazards include one or more of the following:

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- high pressures (hydraulic and pneumatic)
- hot surfaces
- equipment failures
- heat, smoke, dust or other atmospheric hazards
- flammability and explosivity
- equipment or product mass
- slippery surfaces, spills or leaks
- noise, rotational equipment or vibration
- electricity
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS405A Identify problems in fluid power system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP405 Identify problems in fluid power system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS405A Identify problems in fluid power system

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 fluid power problem and possible problem causes
- take appropriate action in a timely manner
- apply operational knowledge to non-routine problems
- develop appropriate maintenance schedule/requirements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- hazards and hazard controls specific to the fluid power system and the plant it is used on
- principles of hydraulics/pneumatics and circuit components
- fluid power circuit diagrams
- types and causes of known fluid power problems for the plant unit and its components
- corrective action appropriate to the problem cause
- appropriate investigation procedures and use of equipment for a range of equipment faults.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - will typically include the use of an appropriate industrial item of equipment requiring demonstration of operation, start and stop procedures and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.

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- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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

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MSMSUP406 Identify faults in electronic control

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS406A Identify problems in electronic control

Application

This unit of competency covers the skills and knowledge required to recognise and diagnose control system faults in electrical/electronic control systems on process equipment. It includes the implementation of appropriate corrective action.

This unit of competency applies to technicians. The technician will be required to apply knowledge of electronic control systems and components to the identification and isolation of faults in equipment. The key factors are the diagnosis and the recommendation of action to resolve routine and non-routine faults, in order to return the equipment to production.

The operator will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all common equipment used in the manufacturing industry and should be able to be applied to all equipment using electrical/electronic control systems. It applies to all work environments and sectors within the manufacturing industry.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify electrical/electronic control system faults	1.1	Categorise the types of machine malfunctions due to electrical and/or electronic faults
		1.2	Describe the effects on product quality of electrical and/or electronic faults
		1.3	Identify possible faulty components from a circuit diagram and knowledge of the function of each component
2	Identify maintenance requirements	2.1	Determine recommended maintenance schedule from manufacturer instructions
		2.2	Determine adequacy of current maintenance regime and any special requirements from fault and maintenance history
		2.3	Determine criticality of machine to production and/or business
		2.4	Develop maintenance schedule and requirements for machine
		2.5	Liaise with all relevant stakeholders to ensure schedule is appropriate
		2.6	Report outcome to appropriate personnel
3	Determine appropriate corrective action	3.1	Examine other possible faults
		3.2	Short list possible fault causes
		3.3	Conduct investigations of machine, products or data to determine most likely fault causes
		3.4	Take appropriate action to ensure fault is rectified

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3.5 Follow up on action to ensure completion in an appropriate timeframe

3.6 Recheck after corrective action to ensure fault has been rectified

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include one or more of the following:

- programmable logic controls (PLC) and ancillaries
- solid-state control/switching units
- switches, relays and solenoids
- position and pressure transducers
- temperature controllers

Hazards

Hazards include one or more of the following:

- electricity
- incorrect/failed connections
- insulation failure
- polarity of components
- gas
- equipment malfunction/failure
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- temperature from hot surfaces and equipment
- test equipment
- unauthorised personnel
- other hazards that might arise

Faults

Faults may arise from non-routine causes and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine faults needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report faults outside area of responsibility to designated person

Non-routine faults are unexpected faults, or variations of previous faults and include one or more of the following:

- loss of flow, power
- power failure
- component malfunction

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- poor maintenance procedures
- regular maintenance
- shutdown
- motor failure effect on cycle time
- short shots
- loss of clamp pressure
- no power
- electronic/electrical faults
- analysis with PLC

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOPS406A Identify problems in electronic control

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP406 Identify faults in electronic control

Modification History

Release 1. Supersedes and is equivalent to MSAPMOPS406A Identify problems in electronic control

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 must include the ability to:

- recognise and analyse control system faults
- identify and select testing methods based on cost and time effectiveness
- identify and develop maintenance requirements
- propose solutions and carry out solutions within scope of authority
- apply operational knowledge to non-routine problems
- identify and implement corrective actions
- monitor process and equipment conditions.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- fundamentals of electricity and electronics
- electronic circuit diagrams
- principles of electronic circuit components
- principles of PLC programming, troubleshooting and diagnosis
- appropriate testing procedures and use of equipment for a range of equipment faults
- interaction of process conditions on product quality
- routine and non-routine causes of equipment failures and processes to develop solutions.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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    - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
    - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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

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MSMWHS100 Follow WHS procedures

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS100A Follow OHS procedures

Application

This unit of competency covers the skills and knowledge required to recognise hazards commonly occurring at the workplace and follow work health and safety (WHS) instructions and procedures.

It covers recognising known hazards, such as those identified in procedures or training, and identifying the underlying causes of these identified hazards.

This unit of competency applies to people on-site who are required to follow WHS instructions and procedures relating to the activity being undertaken. They will be aware of the importance of maintaining their own health and safety and the health and safety of others in the workplace and will also be capable of dealing with incidents and emergencies within their own scope of responsibility and under the direction of their supervisor for the site activity.

While the instructions and procedures must be derived from the relevant organisation WHS policies, the person is not required to understand or interpret these policies. This interpretation should be undertaken by their supervisor for the site activity when informing them of the WHS requirements.

This unit of competency applies to an individual who will be accompanied or directly supervised while on-site.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Recognise hazards	1.1	Identify hazards commonly found in the workplace
		1.2	Check work area routinely before and during work
		1.3	Describe causes of identified hazards
2	Follow procedures for hazard control	2.1	Follow procedures to remove or minimise hazards, within the scope of responsibilities and competencies
		2.2	Use required personal protective and other safety equipment (PPE)
		2.3	Describe the potential consequences of failing to follow these procedures and instructions
3	Follow emergency procedures	3.1	Recognise emergency/emergency alarm
		3.2	Go to muster point following procedure
		3.3	Follow instructions related to the emergency
4	Report problems	4.1	Report to appropriate people in accordance with workplace procedures when hazards or other problems arise

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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:

- 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

Hazards

Hazards include one or more of the following:

- slip/trip hazards
- PPE not available or not functional
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- equipment in unsafe condition with hazard controls not functional
- noise, rotational equipment or vibration
- fire and explosion

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- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions, swarf and scrap
- extreme weather
- other hazards that might arise

Problems

Problems must be reported and corrective action taken according to relevant procedures.

Problems include one or more of the following:

- recognition of hazards
- problems encountered in controlling risks associated with hazards
- observation of an injury and/or incident which occurred in the workplace
- clarification of understanding of WHS policies and procedures

Appropriate personnel

Appropriate personnel include one or more of the following:

- employer
- supervisor
- employees elected as WHS representatives
- other personnel with WHS responsibilities

Reporting methods

Reporting methods include one or more of the following:

- verbal
- written

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS100A Follow OHS procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS100 Follow WHS procedures

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS100A Follow OHS procedures

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:

- recognise hazards
- use required personal protective equipment (PPE)
- take the action specified in the procedures
- report the situation as specified in the procedures

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the rights and responsibilities of personnel under the WHS legislation
- hazard and emergency signs, labels and alarms
- hazards that may arise in the job/work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- types and application of PPE
- procedures for reporting WSE problems and taking action
- emergency procedures.

Assessment Conditions

- Competency must be achieved before performing this activity. 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

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    - 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

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MSMWHS110 Follow emergency response procedures

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS110A Follow emergency response procedures

Application

This unit of competency covers the skills and knowledge required to follow emergency response procedures in the workplace. It involves the use of workplace policies and procedures to maintain a safe work environment for oneself and others.

This unit of competency applies to personnel who are required to know the signals when an emergency situation takes place as well as the proper procedures to follow in order to save oneself from possible injury and/or death.

The unit of competency may be used as part of an induction program for new workers.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element

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1	**Identify emergency situation**	1.1	Identify emergency signals and controls on machines and/or at the worksite
		1.2	Interpret the signals to take appropriate action
		1.3	Identify emergency where there is no mechanical/electronic signal
2	**Follow emergency procedures**	2.1	Report emergency according to procedures
		2.2	Identify emergency leader
		2.3	Follow workplace procedures and work instructions for dealing with a range of emergencies, under direct supervision of emergency leader
		2.4	Describe the potential consequences of failing to follow these procedures and instructions
		2.5	Describe what to do if the emergency leader cannot be located when emergency occurs

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:

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- 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)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Identifying emergency signals

Identifying emergency signals includes one or more of the following:

- recognising emergency alarm:
  - visual (e.g. flashing lights)
  - auditory (e.g. alarms - siren/horn)
- other signs of an emergency for that plant or site

Emergency procedures

Emergency procedures include:

- work instructions and actions to take to deal with specific emergencies
- emergency issues that workers must raise with designated personnel
- designated personnel
- what to do if the emergency leader cannot be located

Emergencies

Emergencies include one or more of the following:

- observation of injury or incident in the workplace
- fires
- chemical or oil spills
- gas leak or vapour emission
- utilities failure
- bomb scares
- failure or malfunction of plant/machinery

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Designated personnel	Designated personnel include one or more of the following: • employer • supervisor • employees elected as emergency team leader • other personnel with emergency team leader responsibilities

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS110A Follow emergency response procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS110 Follow emergency response procedures

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS110A Follow emergency response procedures

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:

- recognise emergency signals and other communication of an emergency
- identify emergency situations in which there is no mechanical/electronic signal
- follow procedures to:
  - identify the emergency leader
  - take the appropriate action in an emergency
  - report according to procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- emergency, fire and injury procedures
- spill or other loss of containment (LOC) procedures
- communicating methods appropriate to role
- reporting requirements.

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

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- 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.

On-the-job assessment will typically involve participation in an emergency drill.

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

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MSMWHS200 Work safely

Modification History

Release 3. Equivalent. Mapping information updated.

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMOHS200A Work safely.

Application

This unit describes the skills and knowledge required to apply workplace policies and procedures to maintain a safe work environment for self and others. This includes identifying work health and safety (WHS) hazards, assessing risk and following safety procedures in the workplace with minimal supervision.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

Work health and safety

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 and assess risk	1.1 Identify hazards in the work area before and during work 1.2 Access and apply relevant safety data sheets (SDS) 1.3 Assess risks for the identified hazards

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Identify controls for these hazards from procedures 1.5 Review effectiveness of controls within the scope of authority 1.6 Identify and report remaining risk
2. Follow procedures for risk control	2.1 Control risks when working under minimal supervision by following workplace procedures 2.2 Follow safety signs and other safety indicators and zones 2.3 Select, use and maintain relevant personal protective equipment (PPE) 2.4 Handle and store items and materials relevant to job safely
3. Follow emergency procedures	3.1 Recognise emergency situations 3.2 Take appropriate initial emergency action 3.3 Follow procedures for dealing with a range of site or plant emergencies
4. Participate in the enhancement of safety	4.1 Raise WHS issues with designated personnel in accordance with workplace procedures and relevant requirements of WHS legislation 4.2 Contribute to participative arrangements for WHS management in the workplace within organisation procedures and the scope of responsibilities and competencies 4.3 Provide input to minimise hazards in work area in line with organisation WHS procedures 4.4 Provide input to opportunities for development of work group's competencies in relation to WHS 4.5 Support the implementation of procedures to control risks using the hierarchy of control and in accordance with organisation procedures 4.6 Report to appropriate people in accordance with workplace procedures when non-routine hazards arise
5. Work in accordance with WHS policies and procedures	5.1 Follow workplace procedures to achieve a safe working environment in accordance with all relevant WHS legislation, including codes of practice relating to hazards within the workplace or industry 5.2 Identify the duties, rights and obligations of employees and employers under the relevant WHS legislation 5.3 Complete hazard, accident or incident reports as required by workplace procedures

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Elements	Performance Criteria
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	5.4 Seek assistance with documentation and processes when needed

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.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMOHS200A Work safely

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS200 Work safely

Modification History

Release 3. Equivalent. Mapping information updated.

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAPMOHS200A Work safely.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified hazards relevant to work area and followed procedures to:
  - assess risks associated with the hazards
  - identify and apply standard controls
  - check that controls are in place and operational.
  -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisational work health and safety (WHS) procedures, including procedures for reporting WHS problems and corrective actions
- duties, rights and obligations of employees and employers under the relevant WHS legislation as they relate to the job role
- hazards that may arise in the work environment, including:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- hierarchy of control
- types and application of personal protective equipment (PPE)
- hazard and emergency signs, labels and alarms
- appropriate responses to non-standard situations.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

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- use of suitable facilities, equipment and resources, including:
  - WHS procedures, incident reporting documentation and safety data sheets (SDS).
  - personal protective equipment (PPE)

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMWHS201 Conduct hazard analysis

Modification History

Release 1 - New unit

Application

This unit of competency covers the skills and knowledge required to conduct a hazard analysis. These are typically called:

- job safety analysis (JSA)
- job hazard analysis (JHA)
- job safety and environmental analysis (JSEA)
- safe work method statement (SWMS)

It is not intended to apply to simpler routine hazard checks, such as ‘Take 5’, Step Back 5x5’, five step or similar.

This might be done as an independent activity in order to identify hazards and the appropriate hazard controls, or it might be done as part of a broader process, such as identifying and applying for the permits required for a job.

The conducting of a hazard analysis may be required under a safety case, by organisation procedures or simply as being good practice.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Define the context for the hazard analysis	1.1	Identify the scope and purpose of the hazard analysis
		1.2	Access the relevant forms or procedures for conducting a hazard analysis
		1.3	Identify specialised knowledge which may be required to conduct the hazard analysis
2	Identify hazards	2.1	Find out job steps to be undertaken
		2.2	Identify hazards of job site
		2.3	Obtain specialised knowledge required
		2.4	Identify hazards for each job step
		2.5	Enter information into appropriate forms in accordance with procedures
3	Assess risks	3.1	Estimate the potential severity/consequence of each identified hazard
		3.2	Consider how hazards may cause harm
		3.3	Estimate the likelihood/possible frequency of harm
		3.4	Use the organisation’s risk matrix to prioritise each risk
		3.5	Enter information into appropriate forms in accordance with procedures
4	Control risks	4.1	Apply organisation’s risk control procedures
		4.2	Use the hierarchy of control so that risks are as low as reasonably practicable (ALARP)

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		4.3	Specify risk controls
		4.4	Check the effectiveness of controls
		4.5	Identify residual risk and implement any additional controls required
		4.6	Enter information into appropriate forms in accordance with procedures.
5	Monitor and review risk controls	5.1	Monitor risk controls and review their effectiveness
		5.2	Keep records in accordance with procedures

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
- Dangerous Goods regulations
- Hazardous substances regulations
- Hazardous Substances Information System
- Major hazard facility requirements, if relevant

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- AS 2865-2009 Confined spaces
- AS 1674 Set-2007 Safety in welding and allied processes (covers all hot work)
- AS 4024.1-2014 Series - Safety of machinery
- AS/NZ 1715:2009 Selection use and maintenance of respiratory protective equipment
- National Standard for Plant [NOHSC:1010 (1994)]
- National exposure standards for atmospheric contaminants in the occupational environment [NOHSC:1003 (1995)]

Scope and purpose

The scope includes the unique identification of the plant items and/or work area which is the subject of the hazard analysis, and by default the adjoining plant/areas.

The purpose includes undertaking one or more of:

- a routine hazard analysis for a work area
- a hazard analysis for a specified job
- a hazard analysis as a precursor to issuing permits
- other purposes defined by organisation procedures

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 control 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

Hazards

Hazards include one or more of the following:

- incomplete process isolations
- mechanical and electrical isolations not in place
- atmospheric testing incomplete and atmosphere unsafe
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards

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- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Specialised knowledge

Specialised knowledge includes information sourced from one or more of the following:

- the person doing the job
- an internal or external technical specialist
- a health and safety expert
- other operational personnel
- literature or internet information
- incident and other records
- risk register
- other knowledge resources of the organisation

Risk

Risk requires the consideration of the consequences of an event and one or both of:

- likelihood/probability
- expected frequency

Severity/consequence

The severity or consequence is typically interpreted against a scale ranging from minor (may require first aid, no lost time, no damage to plant or environment) through to major (may result in death,

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significant damage to plant or environment)

Harm from hazards Harm from hazards includes:

- exposure routes (ingestion, inhalation and skin/eye contact)
- chain of events (event/cause tree and bow tie)
- causal sequence which results in harm to persons, environment, plant or product

ALARP ALARP means as low as reasonably practicable and requires:

- identifying the risk reduction measures available
- determining the level of risk reduction that can be achieved and the associated cost
- implementing the risk reduction measure unless the cost is grossly disproportionate to the benefits of the risk reduction
- justifying available measures that are not taken

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS201 Conduct hazard analysis

Modification History

Release 1 - New unit

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:

- complete a hazard analysis
- specify risk controls to bring risks to ALARP
- identify relevant personnel
- complete appropriate hazard analysis forms (paper or electronic)
- monitor and review effectiveness of risk controls.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the significance of the analysis context
- how the identified hazards may cause harm
- purpose and use of the risk matrix
- monitoring and review of risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a hazard analysis report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.

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- 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).
- Where part of a broader role it may be conveniently co-assessed with units relevant to that broader job.
- Assessment 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

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MSMWHS205 Control minor incidents

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS205A Control minor incidents

Application

This unit of competency covers the skills and knowledge required to control minor incidents. The general purpose of this initial response is to prevent any incident from escalating. In the event of an incident this person may be expected to respond to an incident team member in accordance with procedures.

The unit of competency applies to most operations personnel and some non-operations personnel. It covers skills and knowledge beyond what is typically covered in an induction program, but does not require specialist training, such as is given to members of an incident response team.

Generally the person would be part of a team during an incident response. However, he/she may be required to take independent action. At all times they would be liaising and cooperating with other members of the team.

This unit applies to all sectors of the industry.

This unit will assist individuals to meet some of their obligations under relevant state/territory legislation. However, the unit must be contextualised to ensure compliance with specific regulatory requirements that may apply in a sector, jurisdiction, or type of organisation.

Organisations within the chemical, hydrocarbons and refining industries may find themselves falling under the provisions of various Major Hazard Facilities legislation. In developing this unit consideration has been given to the requirements of Sections 8 and 9 of the National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] and the National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)].

This unit does NOT apply to more significant incidents where higher levels of incident response competencies may be required.

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

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Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Evaluate the** incident	1.1	Recognise an incident has occurred or is about to occur
		1.2	Assess the incident for type of response and the likely effectiveness of first response action
		1.3	Identify the hazards arising from the incident
		1.4	Raise the alarm and seek assistance as required
		1.5	Select appropriate response to control incident
		1.6	Determine hazard control measures to be employed
		1.7	Recommend evacuation if appropriate
2	**Control the incident**	2.1	Maintain personal safety at all times
		2.2	Confine the incident to the area of origin where possible
		2.3	Select appropriate equipment to control incident
		2.4	Use equipment in accordance with procedures
		2.5	Clear and secure the incident area
		2.6	Monitor the incident and surrounding conditions and modify response as appropriate
		2.7	Hand over to specialist incident response personnel as

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			appropriate
3	**Conclude the incident control**	3.1	Report the use of equipment according to procedures
		3.2	Mark or position incident control equipment after use to indicate it requires servicing or replacing
		3.3	Participate in incident debrief and report in accordance with procedures

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:

- National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] (where applicable)
- National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)] (where applicable)
- 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

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form, and include one or more of the following:

- 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

Minor incidents

Minor incidents include one or more of the following:

- fires of the A,B,C,D,E and F classes
- fuel and other spills, and losses of containment (LOC)
- process overheating
- equipment failure

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Equipment

Equipment includes one or more of the following:

- fire doors
- fire sprinkler systems
- fire alarm systems
- first aid kits
- fire-extinguishers
- hoses not requiring special training
- smoke vents
- spill control kits
- personal protective equipment (PPE)
- other hazard control equipment defined in procedures

Appropriate personnel

Appropriate personnel include one or more of the following:

- employer
- supervisor
- employees elected as WHS representatives
- other personnel with WHS responsibilities

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS205A Control minor incidents

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS205 Control minor incidents

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS205A Control minor incidents

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:

- recognise an incident
- evaluate the incident and select an appropriate response
- check equipment and apply correct follow-up procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- classification of fires and other incidents relevant to job/site
- types and application of first response equipment and personal protection equipment (PPE)
- limitations of first response equipment
- situations that must not be responded to because of the risk to life
- scope and limitations of own role and responsibilities
- appropriate personnel for referral and reporting.

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
  - must include the use and actual deployment of appropriate tools, equipment (e.g. fire-extinguishers and spill kits) and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use simulated fires, losses of containment or other incidents
  - is not expected to require the use of a fire ground or similar.

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- 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

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MSMWHS210 Undertake first response to non-fire incidents

Modification History

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMOHS210B Undertake first response to non-fire incidents

Application

This unit of competency covers the skills and knowledge required to recognise and respond to an incident (except for fire/explosion) to provide an appropriate first response.

This unit of competency applies to operators who are required to respond to an incident, such as a leak, spill or other incident. The worker is not expected to deal with the emerging incident, but to provide an initial first response in order to contain the incident and/or secure the immediate area in order to minimise resultant damages and loss. In this unit it is assumed that the worker is acting according to established workplace procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

Organisations within the chemical, hydrocarbons and refining industries may find themselves falling under the provisions of various Major Hazard Facilities legislation. In developing this unit consideration has been given to the requirements of Sections 8 and 9 of the National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] and the National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)].

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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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 level of severity	1.1	Recognise an incident has occurred or is about to occur
		1.2	Access hazard information as appropriate
		1.3	Assess frequency, duration, actual and potential outcome
		1.4	Evaluate and communicate in a timely and appropriate manner the location, nature and extent of the incident
2	Undertake routine response to minimise affect of the incident	2.1	Select the appropriate response from the incident procedures
		2.2	Clear and secure the incident area
		2.3	Select appropriate materials and equipment to contain the incident
		2.4	Safely locate access and operate incident response equipment
		2.5	Apply incident containment procedures as appropriate
3	Notify responsible authorities	3.1	Follow incident reporting procedures
		3.2	Identify appropriate authorities and notify
		3.3	Clearly and unambiguously communicate information concerning the incident in a timely manner
4	Undertake safe evacuation	4.1	Evacuate the area in a safe and controlled manner when first response has failed to control the incident or has proven inappropriate
		4.2	Secure the immediate area of the incident to ensure no further loss occurs to people, equipment, materials,

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process and environment

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
- National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] (where applicable)
- National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)] (where applicable)

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:

- 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

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Hazards and incidents

Hazards and incidents include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- limited head spaces or overhangs
- extreme weather
- other hazards that might arise

Tools and equipment

Tools and equipment include one or more of the following:

- personal protective equipment (PPE)
- incident response equipment, such as spill kits and vapour dispersion
- evacuation equipment
- survival equipment
- breathing apparatus
- smoke or self rescue respirators
- atmosphere/gas testing equipment
- mobile and portable equipment
- first aid equipment
- pipeline repair clamps
- lamb air movers
- barricades and signage
- communications equipment, such as two-way radios, mobile and satellite phones and pagers

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Responsible authorities

Responsible authorities include one or more of the following:

- internal personnel:
  - employer
  - supervisor
  - employees elected as incident team leader
  - other personnel with incident team leader responsibilities
- external personnel:
  - police
  - fire brigade
  - ambulance

Unit Mapping Information

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMOHS210B Undertake first response to non-fire incidents

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS210 Undertake first response to non-fire incidents

Modification History

Release 2. Addition of information missing from the Assessment Requirements. Equivalent.

Release 1. Supersedes and is equivalent to MSAPMOHS210B Undertake first response to non-fire incidents

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:

- recognise and assess incident situations
- determine appropriate actions according to procedures and within scope of own responsibilities, including:
  - evacuate (self/others)
  - seek assistance as appropriate
  - apply control measures
  - select and use incident response equipment
  - select and use personal protective equipment (PPE)
  - implement corrective action
  - minimise the effect of an incident situation
- communicate clearly and unambiguously with a range of personnel on incident situations, related problems and safety and emergency procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of incident response equipment
- principles of operation of the incident response equipment
- types and application of PPE
- roles and responsibilities of internal and external personnel in relation to incident situations
- communicating methods appropriate to role
- appropriate responses to different non-fire situations.

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.

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- 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
  - must include the use of appropriate incident containment tools, equipment, media and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - must include responding to an actual spill or other incident in a simulated industrial situation and so may need to occur in a specialised area.
- 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.
- Knowledge evidence will be collected independently of the above practical assessment and may use workbooks, written assessments, interviews (provided a record is kept) or other methods.
- Assessment 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.
- Persons seeking verification of competence/retraining must meet the same evidence requirements as above.
- 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

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MSMWHS212 Undertake first response to fire incidents

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS212A Undertake first response to fire incidents

Application

This unit of competency covers the skills and knowledge required to undertake an appropriate first response to fire incidents in onshore and offshore situations/emergencies.

People working, operating or who regularly travel to an onshore or offshore hydrocarbon/petrochemical installation or facility or major hazard facility may require this competency.

This unit could be applied to any of the following installations or facilities:

- factories and production plants
- onshore/offshore rig/installation
- island based facility
- floating production vessel or platform
- onshore production, processing pipeline systems and/or storage facilities
- pipeline easements
- maintenance bases.

This unit of competency applies to operators who are required to respond to fires in the workplace (other than evacuating to the assembly point). It covers the first response (only) to fire, and does not include aggressive fire-fighting. Typically this response would be undertaken to contain/extinguish a minor fire or to contain a more major fire until external help arrives (for an urban plant) or to allow for mobilisation of more highly trained responders or evacuation (for a remote/offshore plant).

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

Organisations within the chemical, hydrocarbons and refining industries may find themselves falling under the provisions of various Major Hazard Facilities legislation. In developing this unit consideration has been given to the requirements of Sections 8 and 9 of the National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] and the National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)].

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify fire emergency and raise alarm	1.1	Evaluate and communicate the location, nature and extent of the fire emergency in a timely and appropriate manner
		1.2	Determine first response requirements in order to evaluate the need to attack the fire emergency or evacuate the affected areas
2	Initiate basic fire responses	2.1	Maintain personal safety at all times in accordance with work health and safety (WHS) guidelines
		2.2	Put on appropriate personal protective equipment (PPE) in accordance with organisation procedures
		2.3	Select appropriate extinguishing agents and equipment based on knowledge of fire and fuel types
		2.4	Operate basic fire-fighting equipment safely, according to manufacturer specifications and organisation procedure, in order to contain the fire emergency
		2.5	Observe changing conditions at the fire, their effects on fire behaviour and report

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3	Notify responsible authorities	3.1	Follow emergency reporting procedures
		3.2	Identify and notify appropriate authorities
		3.3	Clearly and unambiguously communicate information concerning the emergency in a timely manner
4	Undertake safe evacuation	4.1	Evacuate area in a safe and controlled manner when first response has failed to control the fire emergency, or has proven inappropriate
		4.2	Secure immediate area of the emergency to ensure no further loss occurs to people, equipment, process and environment

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
- National Standard for the Control of Major Hazard Facilities [NOHSC:1014 (2002)] (where applicable)

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- National Code of Practice for the Control of Major Hazard Facilities [NOHSC:2016 (1996)] (where applicable)

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:

- emergency procedures
- manufacturer specifications
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Tools and equipment

Tools and equipment include one or more of the following:

- appropriate PPE
- breathing apparatus
- handheld extinguishers
- hose reels
- fire monitors
- fire blankets
- smoke or self rescue respirators
- mobile and portable equipment
- first aid equipment
- pipeline repair clamps
- lamb air movers
- barricades and signage
- communication equipment, such as two-way radios, mobile and satellite phones and pagers
- fire-extinguishing media, including water, foam, extinguishing powder, gaseous extinguishing agents, vapourising liquids, and other fire-extinguishing substances

Basic fire response

Basic fire response includes one or more of the following fire-fighting tactics:

- direct attack
- indirect attack
- combination attack
- exposure protection

It does NOT include internal/offensive attacks

Responsible authorities

Responsible authorities include one or more of the following:

- internal:
  - employer
  - supervisor
  - employees elected as incident team leader
  - other personnel with incident team leader responsibilities
- external:
  - police
  - fire brigade
  - ambulance

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS212A Undertake first response to fire incidents

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS212 Undertake first response to fire incidents

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS212A Undertake first response to fire incidents

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:

- recognise and assess fire situations, including the identification of different types of fires and fuels
- determine appropriate actions according to procedures and within scope of own responsibilities, including:
  - evacuate (self/others)
  - seek assistance as appropriate
  - apply control measures
  - select and use a range of first response fire-fighting safety equipment
  - select and use appropriate extinguishing agent
  - apply defensive fire-fighting tactics and techniques
  - select and use personal protective equipment (PPE)
  - minimise the effect of a fire incident
- communicate clearly and unambiguously with a range of personnel on fire emergency conditions, related problems and safety and emergency procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including:
  - site or organisation emergency procedures and response plans
  - site-specific isolation procedures
- characteristics of fire and fuel types
- composition and uses of extinguishing agents
- types and application of basic firefighting equipment
- types and application of PPE
- roles and responsibilities of internal and external personnel in relation to fire incidents
- appropriate responses to different fire situations.

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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
  - must include the use of appropriate firefighting tools, equipment, extinguishing media and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - must include responding to an actual fire in a simulated industrial situation (e.g. a fire ground).
- 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.
- Knowledge evidence will be collected independently of the above practical assessment and may use workbooks, written assessments, interviews (provided a record is kept) or other methods.
- Assessment 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.
- Persons seeking verification of competence/retraining must meet the same evidence requirements as above.
- 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

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MSMWHS216 Operate breathing apparatus

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS216A Operate breathing apparatus

Application

This unit of competency covers the skills and knowledge required to operate and maintain breathing apparatus and equipment in an irrespirable atmosphere, as defined by the Australian Standard AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment.

This unit of competency applies to operators who are required to wear breathing apparatus because they are working:

- in a confined space
- with hazardous gases/vapours
- in an oxygen deficient atmosphere
- in other situations requiring the wearing of breathing apparatus.

Operators may also be required to wear breathing apparatus in emergency situations, however, this is not the prime focus of this unit.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Conduct pre-donning checks and tests on breathing apparatus	1.1	Inspect breathing apparatus for immediate use in accordance with procedures
		1.2	Report/record faulty or damaged equipment in accordance with procedures
2	Operate breathing apparatus	2.1	Identify, monitor and control hazards in accordance with the procedures
		2.2	Establish and maintain communication with appropriate personnel throughout the activity
		2.3	Use breathing apparatus for the required activities in accordance with procedures
		2.4	Monitor remaining working time available and return to a respirable atmosphere as required
		2.5	Implement entrapment procedures in accordance with procedures
		2.6	Maintain personal safety at all times
3	Conclude operations in accordance with procedures	3.1	Close down breathing apparatus set
		3.2	Remove breathing apparatus set
		3.3	Undertake after-use cleaning and maintenance of breathing apparatus
		3.4	Make equipment ready for operational use

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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/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment* or its authorised replacement

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:

- 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

Breathing apparatus

Breathing apparatus includes one or more of open circuit:

- self-contained breathing apparatus (SCBA)
- airline equipment
- other similar breathing apparatus

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It does not cover the use of rebreather (closed circuit) apparatus.

Hazards Hazards include one or more of the following:

- entrapment
- failure to maintain a face seal
- exhaustion of air supply
- heated atmospheres
- asphyxiating atmosphere (oxygen deficient)
- (non-skin absorption) toxic or poisonous atmosphere
- smoke or suspended particles/fibres in atmosphere
- malfunction of equipment
- disorientation in smoke, darkness or confinement
- fire and explosion
- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS216A Operate breathing apparatus

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS216 Operate breathing apparatus

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS216A Operate breathing apparatus

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 must include the ability to:

- conduct pre-donning tests on breathing apparatus
- correctly don and operate breathing apparatus
- identify hazards and apply control measures according to procedures
- communicate while using breathing apparatus
- determine the available working time from a breathing apparatus set
- correctly close down, remove and clean breathing apparatus
- report faults and/or damage to breathing apparatus.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the effects of irrespirable atmospheres on the body and the need for protective equipment
- characteristics, component parts, operation of compressed air breathing apparatus
- operational testing, standard operating procedures (SOPs) and safe work practices when wearing breathing apparatus
- use of procedures, personal lines and tallies
- pre-use tests and checks
- breathing apparatus control
- entrapment procedures
- communications while wearing breathing apparatus.

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:

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  - 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
  - must include the use of breathing apparatus, 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

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MSMWHS217 Gas test atmospheres

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS217A Gas test atmospheres

Application

This unit of competency covers the skills and knowledge required to test the working atmosphere, using electronic test apparatus, to find out if it is safe for the proposed work.

It applies to situations where an individual may be required to carry out gas testing of an atmosphere prior to entering a specific area or workspace. The competency requires the person to interpret readings and take actions based on the interpretation.

Working environment may be hazardous, unpredictable, subject to time pressure, chaotic and expose responders to risk, on land or water, by day or night. Workplace atmospheres may include visible and invisible hazards and hazardous surfaces.

The unit is suitable for use in the following situations:

- confined spaces
- enclosed and partially enclosed spaces
- hot work
- storage tanks, silos, pits, pipes, shafts, ducts, transport vehicles and ships
- testing as part of issuing a work permit
- monitoring as part of working under a work permit
- open areas
- holding the gas tester by hand
- lowering the gas tester into a space, e.g. on a line.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

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Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Prepare for gas testing	1.1	Find out type of gas/atmosphere to be tested
		1.2	Select and calibrate equipment in accordance with procedures
		1.3	Find out gas testing regime/sampling pattern required
		1.4	Identify hazards from possible atmosphere contaminants
		1.5	Implement hazard control measures and use of appropriate personal protective equipment (PPE)
2	Test gas	2.1	Use gas testing equipment to test gas as required
		2.2	Interpret and report readings
		2.3	Monitor gas on an ongoing basis as required
		2.4	Take required action if readings are unacceptable
		2.5	Communicate required actions to be taken to appropriate personnel
3	Maintain equipment	3.1	Clean and maintain gas testing equipment in accordance with procedures
		3.2	Inspect and fault-find monitoring equipment in

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accordance with procedures

3.3 Return gas testing equipment to required location and in required condition

3.4 Maintain records of tests and results in accordance with procedures

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
- AS 1674.1-1997 Welding and allied processes - Fire precautions

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)

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- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Tools and equipment include one or more of the following:

- portable instruments
- sampling tubes and pumps
- oxygen level meter
- combustible gas detectors
- other hazardous gas meters
- PPE

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems include one or more of the following:

- changes in readings
- unexpected readings
- faults in equipment

Known solutions include one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures

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- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- limited head spaces or overhangs
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS217A Gas test atmospheres

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS217 Gas test atmospheres

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS217A Gas test atmospheres

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 must include the ability to:

- recognise and assess conditions that require testing
- identify the appropriate action according to procedures and within scope of responsibility, including:
  - selecting, preparing and using gas testing equipment
  - applying testing regime
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and applying control measures
  - cleaning and maintaining equipment
- take readings and interpret, report/record relevant data
- apply known solutions to routine problems
- communicate clearly and unambiguously with a range of personnel on safety conditions and procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including:
  - work permit systems
  - safety, hazards and hazard control
  - incident, fire and accident
  - PPE
  - organisation standard operating procedures (SOPs)
- common atmospheric hazards and contaminants
- explosive range, upper and lower explosive limits
- exposure standards (time-weighted average, short-term exposure limits, peak limitation values, and examination of toxic effect at the level of a range of flammable gases)
- conditions under which atmospheres become hazardous
- units of measurement used to express concentration of atmospheric contaminants (mg/cubic m. ppm, % v/v).

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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:
  - must include the use of the relevant gas testing meters and any other relevant tools, equipment and safety gear, and require demonstration of preparation, operation, completion and responding to problems
  - 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
  - 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

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MSMWHS218 Control the risks of falls

Modification History

Release 1. New unit

Application

This unit of competency covers the skills and knowledge required to recognise and control the risks of falls.

This unit of competency applies to operators who are required to undertake work in which there is a risk of injury to themselves or any other person by falling from one level to another.

This unit of competency reflects the requirements of Part 4.4 of Work Health and Safety (WHS) Regulations 2011. While the regulations focus on the requirements for the Person Conducting a Business or Undertaking (PCBU), this unit is directed at the worker undertaking a specific job/work.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit includes the use of fall-arrest equipment which complies with AS/NZS 1891 Series - Industrial fall-arrest systems and devices as part of this competency.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify job requirements	1.1	Identify the job scope and location
		1.2	Review options for carrying out all or part of the job on the ground or on a solid construction
		1.3	Confirm the safe access to and exit from the work area where there is a risk of fall
		1.4	Obtain required authorisations for the work and verify hazard controls are functioning
		1.5	Check the adequacy of fall prevention devices, where appropriate
		1.6	Check the adequacy of work positioning systems, where appropriate
		1.7	Confirm methods of moving tools, equipment and materials to/from the work area are adequate
2	Use fall-arrest equipment in accordance with procedures	2.1	Select fall-arrest equipment needed
		2.2	Check condition of fall-arrest equipment
		2.3	Put on and adjust required fall-arrest equipment
		2.4	Check the emergency and rescue procedures in relation to the fall-arrest system
3	Undertake work in accordance with procedures	3.1	Safely access the work area
		3.2	Attach fall-arrest equipment to approved anchor as required
		3.3	Maintain the function of fall prevention devices and work positioning systems

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		3.4	Move tools, equipment and materials to work area as required
		3.5	Undertake the scoped work
		3.6	Remove all tools, equipment and materials from the work area
		3.7	Safely exit the work area
4	Complete the job	4.1	Take off, check, clean and put away fall-arrest equipment
		4.2	Close out authorisations for the work
		4.3	Complete any required documentation or records

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
- relevant state/territory regulation/guidelines/codes on fall protection

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- AS/NZS 1891 Series - Industrial fall arrest systems and devices
- AS 1657-2013 Fixed platforms, walkways and ladders – Design, construction and installation
- AS 2550 Set-2011 Cranes, hoists and winches – Safe use Set
- AS 2550.10-2006 Cranes, hoists and winches - Safe use – Mobile elevating work platforms
- AS/NZS1418 Set:2013 Cranes hoists and winches Set
- AS/NZS 4576:1995 Guidelines for scaffolding
- AS/NZS 1576 Series - Scaffolding
- AS/NZS 1892 Series - Portable ladders
- International Industrial Rope Access Trade Association (IRATA) International Code of Practice for industrial rope access

Required authorisations

Required authorisations include:

- work permits or such other controls as may be part of the work control system/procedures

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 control 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

Hazards

Hazards include one or more of the following:

- incomplete process isolations
- mechanical and electrical isolations not in place
- atmospheric testing incomplete and atmosphere unsafe
- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards

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- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS218 Control the risks of falls

Modification History

Release 1. New unit

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 on at least one (1) occasion:

- identify and check fall prevention devices and work positioning systems
- select, check, put on and use fall-arrest equipment
- undertake work which is at height while wearing fall-arrest equipment
- obtain required authorisation for the work
- complete any required documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant procedures, hazard controls and work control/authorising systems
- methods of putting on and adjusting fall-arrest equipment
- symptoms of wear and other problems in fall-arrest equipment
- types and functions of fall prevention devices and work positioning systems.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:
  - must include the use of fall-arrest equipment in a work area where a fall by a person from one level to another is reasonably likely to cause injury to the person or any other person
  - must include the conduct of a simple task (work), while within the work area
  - requires the work to be done under an appropriate authorisation which is a reasonable facsimile of industrial authorisations
  - requires the person to undertake all checks and complete all documentation that is required for working in a situation where a fall is reasonably likely.
- The work area used should be a reasonable facsimile of an industrial work area where there is a reasonable risk of a fall.

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- 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.
- The industry regards reassessment on a two year cycle as good practice.
- Persons seeking retraining/verification of competency and who have adequate evidence of having worked in a situation where a fall is reasonably likely and of applying current good practice in the last twelve months may be granted recognition of prior learning (RPL) for the practical assessment component.
- 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

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MSMWHS300 Facilitate the implementation of WHS for a work group

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS300A Facilitate the implementation of OHS for a work group

Application

This unit of competency covers the skills and knowledge required to implement and monitor defined work health and safety (WHS) policies and procedures for a work group or area.

This unit of competency applies to people in a team leader or similar role and to people who are on a WHS committee.

It covers the ability to provide clear directions, information, instruction, training and appropriate supervision regarding the relevant state/territory WHS legislation, codes of practice, industry standards, workplace procedures and work instructions. It also covers the ability to coach team members to participate and contribute to WHS management issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

MSMWHS200 Work safely

Competency Field

HSE

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Communicate WHS information for co-workers in team	1.1	Accurately and clearly explain to the work group basic WHS rights, responsibilities and requirements
		1.2	Provide, in a readily accessible manner, information on the relevant organisation WHS policies, procedures and programs, and accurately and clearly explain them to the work group
		1.3	Regularly provide relevant information about identified hazards and the outcomes of risk assessment and risk control procedures, and accurately and clearly explain them to the work group
2	Coach co-workers in team	2.1	Establish mutual support groups, e.g. buddy system, to encourage effective development of individual and group competencies in WHS
		2.2	Provide personal encouragement and assistance to team members to contribute to the management of WHS at the workplace
3	Facilitate the consultative process	3.1	Deal with, and promptly resolve, issues raised through consultation or refer to the appropriate personnel for resolution in accordance with workplace procedures
		3.2	Seek input from work group on WHS issues and proposed changes to process, procedures or work place
		3.3	Encourage and use feedback from individuals and teams to identify and initiate improvements in the management of WHS
		3.4	Promptly inform the work group of the outcomes of consultation over WHS issues

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4	Implement and monitor organisation procedures for identifying hazards, and assessing and controlling risk	4.1	Implement and monitor WHS policies and procedures as defined by organisation
		4.2	Monitor existing risk control measures and report results regularly
		4.3	Access internal and external sources of relevant WHS information
		4.4	Evaluate and identify inadequacies in existing risk control measures in accordance with the hierarchy of control, and report to designated personnel
		4.5	Identify inadequacies in resource allocation for implementation of risk control measures and report to designated personnel
		4.6	Identify actual/potential inadequacies in procedures and report to designated personnel
		4.7	Identify actual/potential inadequacies in individual or team competency and report to designated personnel
5	Maintain and use WHS records	5.1	Accurately and legibly complete WHS records for work area, in accordance with workplace requirements for WHS records and legal requirements for the maintenance of records of workplace injury and disease
		5.2	Use aggregated information from the area WHS records to identify hazards and monitor risk control procedures within work area according to procedures and within scope of responsibilities and competencies

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- electricity
- gas and
- gases and liquids under pressure
- structural hazards

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- structural collapse
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- limited head spaces or overhangs
- unauthorised personnel
- other hazards that might arise

Appropriate personnel

Appropriate personnel include one or more of the following:

- employer
- supervisor
- employees elected as WHS representatives
- other personnel with WHS responsibilities

WHS records

WHS records include one or more of the following:

- hazard and incident reports
- logs/logs sheets
- inspection/start up/shut down checklists
- injury reports
- maintenance records

WHS information sources

WHS information sources include one or more of the following:

- WHS legislation, codes of practice and Australian and International standards
- WHS regulators
- WorkSafe Australia Guides
- industry bodies
- internet sites, journals and newsletters
- manufacturer manuals
- material safety data sheets (MSDS) and registers
- organisation WHS policies and procedures
- internal risk assessments, job safety analyses (JSAs) and workplace inspections

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- internal hazard and incident reports

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS300A Facilitate the implementation of OHS for a work group

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS300 Facilitate the implementation of WHS for a work group

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS300A Facilitate the implementation of OHS for a work group

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 include the ability to:

- communicate using appropriate style and format for a range of stakeholders to:
  - promote and facilitate consultation and participation in the WHS processes
  - provide WHS information to work group
  - explain WHS procedures to work team members
  - report to designated personnel
  - seek input and feedback on WHS issues
  - undertake WHS issue resolution
- implement and monitor defined WHS activities for a work group or area
- encourage and assist the development of work group members
- evaluate and report on WHS procedures and practices
- participate in decisions which impact on WHS for the workgroup
- recognise a situation requiring action, including hazards, and take specified action to rectify or seek assistance as appropriate.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate independently and to solve routine and non-routine problems, including:

- assessment of risk and implementation of risk control measures
- rights and responsibilities of employees under WHS legislation
- obligations of employers under the WHS legislation, including duty of care
- regulatory requirements for WHS information and consultation and processes and arrangements to meet these obligations
- regulatory requirements for WHS record keeping and reporting
- regulatory requirements for training and licensing relevant to WHS
- the hierarchy of control
- counselling, disciplinary and issue resolution processes.

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Assessment Conditions

- Where the candidate does not currently possess evidence of competency in MSMWHS200 Work safely, it may be co-assessed with this unit.
- 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 a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include a demonstration of communication of WHS information to a group and the use of appropriate consultation and participation from within that group
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- 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.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMWHS400 Contribute to WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS400A Contribute to OHS management system

Application

This unit of competency covers the skills and knowledge required to contribute to the work health and safety (WHS) management system.

The WHS management system will already have been developed by persons with the relevant specialist knowledge and skills.

This unit of competency applies to personnel who are required to implement, monitor and improve the WHS management system within a work group or area. It typically applies to a WHS specialist, or a team leader, supervisor or manager who has particular WHS responsibilities.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element
1 Develop and	1.1 Access current, relevant information on legislative and

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	review procedures for identifying hazards, and assessing and controlling risk		industry requirements for hazard identification and risk assessment and control
		1.2	Identify gaps in procedures
		1.3	Develop workplace procedures to meet requirements
		1.4	Involve relevant stakeholders in procedures development
		1.5	Review the procedures on a regular basis by consulting stakeholder groups for feedback
		1.6	Inform relevant stakeholders and other work groups of any changes and implement changes in the procedures
2	Develop and review incident procedures	2.1	Identify legal and organisation requirements
		2.2	Identify gaps in procedures
		2.3	Develop workplace procedures for dealing with incidents
		2.4	Review the procedures by consulting stakeholder groups for feedback
		2.5	Inform relevant stakeholders and other work groups of any changes and implement changes in the procedures
3	Implement and review training program from an WHS perspective	3.1	Identify the legal, organisational and practical requirements for WHS training
		3.2	Evaluate the workplace training program for WHS gaps
		3.3	Review the program on a regular basis by consulting stakeholders and work groups for feedback
		3.4	Take appropriate action to incorporate relevant feedback into the revised program
		3.5	Inform relevant work groups of any changes and implement changes in the WHS training program
4	Implement and review WHS	4.1	Identify the legal and organisational requirements for WHS records

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recording system	4.2	Evaluate the workplace WHS recording system for gaps
	4.3	Review the system on a regular basis by consulting stakeholders and work groups for feedback
	4.4	Incorporate relevant feedback into the revised system in consultation with stakeholders
	4.5	Inform relevant work groups of any changes and implement changes in the management of WHS records

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

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.

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards Hazards include one or more of the following:

- slip/trip hazards
- PPE is unavailable or not functional
- 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
- equipment is in safe condition with hazard controls functional
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions, swarf and scrap
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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WHS records WHS records include one or more of the following:

- hazard and incident reports
- logs/logs sheets
- inspection/start-up/shutdown checklists
- injury reports
- maintenance records

WHS information sources WHS information will be accessed from internal and external sources, including one or more of:

- WHS legislation, codes of practice and Australian and International standards
- WHS regulators
- WorkSafe Australia Guides
- industry bodies
- internet sites, journals and newsletters
- manufacturer manuals
- material safety data sheets (MSDS) and registers
- organisation WHS policies and procedures
- internal risk assessments, job safety analyses (JSAs,) and workplace inspections
- internal hazard and incident reports

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS400A Contribute to OHS management system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS400 Contribute to WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS400A Contribute to OHS management system

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 include the ability to:

- communicate using appropriate style and format for a range of stakeholders to:
  - review WHS procedures, training program and recording system
  - provide information on the effectiveness of the WHS management system in minimising risk
  - consult and seek feedback
  - develop new procedures and improve existing procedures
  - inform work group or area about changes in WHS procedures
  - interact with the work group or area to ensure the WHS processes and procedures are applied
- analyse WHS information to:
  - identify gaps in procedures and training
  - identify improvements in procedures
  - incorporate feedback from stakeholders
  - ensure WHS procedures and improvements comply with the regulatory framework
- apply the hierarchy of control to recommend actions to minimise risk
- plan and implement appropriate review processes
- write clearly and unambiguously, including:
  - reports
  - draft policies and procedures
  - WHS information.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- WHS responsibilities of employers and employees, including supervisors and contractors
- regulatory requirements for WHS, including:
  - duty of care responsibilities
  - information and consultation and processes and arrangements to meet these obligations

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    - record keeping and reporting
    - training and licensing relevant to WHS
- elements of a WHS management system, including:
    - principles and practices of effective WHS management and risk control
    - sources and types if information that provide realistic information on the performance of the WHS management system
    - techniques for analysing WHS data, including simple statistical analysis and graphing of trends all relevant workplace procedures
    - types and application of review processes including review of written reports, analysis of data, performance appraisal and auditing
    - WHS issue resolution processes.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
    - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
    - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.
- 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.
- 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.

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Links

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MSMWHS401 Assess risk

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS401A Assess risk

Application

This unit of competency covers the skills and knowledge required to identify hazards and operability problems and then analyse them by hazard analysis techniques to assess risk.

This unit of competency is a specialist unit requiring technical knowledge and is suitable for plant technicians and people in similar roles.

A team with a broad knowledge of the system and its operation will carry out the analysis. It is expected that the risk assessment processes are already defined for the enterprise and that the risk acceptance criteria have already been established. The team will be steered by engineering experts or risk assessment specialists in the industry.

This unit of competency applies to workers who take an active role in a hazard and operability study (HAZOP) or similar methodology. They are not expected to lead the HAZOP. This unit is not restricted to HAZOPs and may be applied to other methodologies requiring similar competency. The risk assessment should be consistent with AS/NZS ISO 31000:2009 Risk management – Principles and guidelines.

Team members will contribute their understanding of the process and particularly the operational aspects, and then carry out whatever tasks are assigned to them by the analysis team.

The aim of this unit of competency is to apply a methodical examination of the system and its elements to identify hazards and the states or conditions where there may be loss of control of the hazard and the resultant consequences.

The technique can be applied at any stage of a project/process life cycle.

Although hazard identification should be the main focus, operability problems should be identified to the extent that they have the potential to lead to a breakdown in hazard controls resulting in a health, safety or environmental (HSE) violation or have a negative impact on profitability.

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This unit of competency applies to an individual working as part of a team or group.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify hazards and potential operability problems	1.1	Contribute to the compiling of a system description of all the machinery, equipment, operations, products and materials relevant to the everyday working procedures of the facility
		1.2	Contribute to the compiling of a checklist containing process parameters (primary key words) and guide words (secondary key words) relevant to the system
		1.3	Identify hazards, existing control measures and potential operability problems or breakdowns in control measures using the compiled system descriptions and the checklist
2	Assess impact of risk and determine alternative strategies	2.1	Screen for causes of deviations and establish consequences
		2.2	Determine alternative strategies for action in relation to each deviation within the range of competency and responsibility
		2.3	Review, clarify and/or analyse risk information to determine its relevance and reliability depending upon

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			the task assigned, level of competency and area of responsibility
3	Assess risk information against established risk criteria in risk management plan	3.1	Check risk acceptance criteria for any changes over past period
		3.2	Compare risk information against risk acceptance criteria and procedures to assess acceptability of risk
		3.3	Liaise with other internal departments to assess impact on business, if applicable
		3.4	Document findings according to company policies and procedures
4	Develop a risk register	4.1	Develop a risk assessment chart for each system studied containing deviation, cause, consequence, control measures and action
		4.2	Develop action plan for implementation of control measures, including any changes to procedures
		4.3	Establish or review the procedures by consulting relevant/different work groups.
		4.4	Inform relevant work groups of any changes and implement, within area of responsibility, changes in the procedures
		4.5	Monitor effectiveness of the control measures, including revised procedures
5	Establish and maintain procedures for identifying hazards, and assessing and controlling risk	5.1	Identify and develop procedures for routine hazard identification, assessment and control of risks
		5.2	Address identification of all hazards at the planning, design and evaluation stages of any changes in the workplace to ensure that new hazards are not created by the proposed changes
		5.3	Develop and maintain procedures for selection and implementation of risk control measures in accordance with the hierarchy of control

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5.4	Identify inadequacies in existing risk control measures in accordance with the hierarchy of control and, within area of responsibility, promptly provide resources enabling implementation of new measures

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- limited head spaces or overhangs
- extreme weather
- other hazards that might arise

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems include one or more of the following:

- incidents with a potential for injury

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- fires and explosions
- chemical spills
- bomb scares

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Risk assessment methodology

Risk assessment methodology must:

- enhance the understanding of risk and how it may be reduced
- permit the modelling and evaluation of a wide range of failure modes
- enable the analysis to be carried out in a manner that is auditable, repeatable and verifiable
- be usable by other staff
- be appropriate to the system operating in the given domain
- give valid results from the type and quantity of data that is available
- be appropriate for the particular life cycle phase at which it is to be applied
- be supported by standard proformas for the technique
- have a rational technical basis, typically through reference to national or international standards, Defence standards or published reference books

This is not restricted to HAZOP methodology; other methodologies requiring similar competency may be used.

Process parameters

Specific process parameters (primary key words) relevant to the system will include three (3) or more of:

- flow
- temperature
- pressure
- relief
- instrumentation
- sampling
- addition
- safety

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- reaction
- reduce (grind and crush)
- absorb
- isolate
- vent
- start-up
- composition
- phase
- level
- corrosion
- erosion
- services
- utilities
- maintenance/maintain
- inserting
- purging
- contamination
- separate (settle, filter and centrifuge)
- mix
- drain
- shutdown

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS401A Assess risk

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS401 Assess risk

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS401A Assess risk

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 must include the ability to:

- apply a systematic risk assessment methodology
- identify and interpret information from a range of internal and external sources
- interpret hazard and probability data to determine risk profiles
- communicate with a range of stakeholders to:
  - identify risks and causes
  - identify consequences and assess impact of risks
  - plan and implement changes to procedures
- plan and implement control measures
- apply operational knowledge to non-routine problems
- monitor and evaluate outcomes of control measures and procedures and make improvements as appropriate
- document findings and complete reports.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- day-to-day operations of the facility, including:
  - machinery, equipment, operations, products and materials
  - process parameters (primary key words) and guide words (secondary key words)
  - workplace systems and the importance of critical procedures
- hazard identification and control measures
- how hazard controls may break down
- quantitative risk assessment, such as hazard analysis (HAZAN)
- risks and how they may be reduced
- key features of a systematic risk assessment methodology, including:
  - what makes it auditable, repeatable, verifiable and usable by other staff
  - how it can be used for modelling and evaluation of a wide range of failure modes
  - available data and how it can give valid results
  - its rational technical basis
- analysis systems appropriate to the system operating in the given domain and appropriate for the particular life cycle phase at which it is to be applied.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of having been a member of a HAZOP (or similar) team and meeting the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.
- 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

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MSMWHS503 Maintain WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS503A Maintain the workplace OHS management system

Application

This unit of competency covers the skills and knowledge required to maintain and improve an established work health and safety (WHS) management system.

The WHS management system will already have been developed by persons with the relevant specialist knowledge and skills.

This unit of competency applies to personnel with a specialised responsibility for maintaining the WHS management system. Depending on the organisation this might be an owner, manager, team leader, WHS officer/manager, a technician with particular WHS responsibilities, or someone in a similar role. The competency applies within the area of managerial responsibility, which may be an entire organisation or department of an organisation.

The work will be carried out with the support of other team members.

Management must be aware that, while employees have WHS responsibilities, line managers are ultimately responsible, under both WHS legislation and common law duty of care, for the safety of the workplace, including ensuring that employees comply with documented work procedures. This legislation includes general WHS legislation as well as that for hazardous substances, dangerous goods and major hazard sites.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Manage WHS information in the workplace	1.1	Take action to ensure that requirements for WHS record keeping and reporting are implemented according to workplace procedures and legislative requirements
		1.2	Access sources of WHS information and evaluate for application to the workplace
		1.3	Collect and collate data and information to provide information to managers and stakeholders on WHS requirements, trends and risk controls
2	Support implementation of WHS management system	2.1	Determine WHS priorities in consultation with appropriate managers and stakeholders
		2.2	Identify WHS training needs for implementation and maintenance of the WHS management system
		2.3	Develop action plans taking account of priorities and training needs
		2.4	Monitor achievement of action plans and update plans accordingly
3	Support WHS participative arrangements	3.1	Ensure WHS information and documentation is understandable and accessible to all
		3.2	Promptly address WHS issues that may arise within area of authority or refer to appropriate person
		3.3	Provide information about the outcomes of WHS consultation in a manner that is accessible to all
4	Collect data to evaluate currency	4.1	Identify, in consultation with stakeholders and, as required expert advisors, internal data and information

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	of WHS management system		that provides relevant and reliable information on the performance of the WHS management system
		4.2	Conduct workplace inspections on a regular basis.
		4.3	Identify workplace WHS implications of any changes to legislation
		4.4	Identify any WHS implications to proposed changes to the workplace
		4.5	Take action to arrange a WHS management system audit
5	Analyse data and information to identify areas for improvement	5.1	Assess compliance of WHS management system with WHS legislation
		5.2	Analyse information collected to identify areas for improvement.
		5.3	Consult with stakeholders, key personnel and, as required, WHS advisors
		5.4	Document and communicate outcomes of analysis to key personnel and stakeholders in an easily understood format
		5.5	Recognise limits of own expertise and seek appropriate advice
6	Initiate and maintain improvements	6.1	Determine priorities for WHS in consultation with stakeholders
		6.2	Develop a WHS plan with responsibilities and timeframes and validate the plan with stakeholders
		6.3	Identify and source resources required for implementation of plan
		6.4	Monitor achievement against plan
		6.5	Monitor effectiveness of modifications to WHS management system on an ongoing basis incorporating feedback from stakeholders

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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WHS records WHS records include one or more of the following:

- hazard and incident reports
- logs/logs sheets
- inspection/start-up/shutdown checklists
- injury reports
- maintenance records

WHS information sources WHS information sources include one or more of the following:

- WHS legislation, codes of practice and Australian and International standards
- WHS regulators
- Safe Work Australia Guides
- industry bodies
- internet sites, journals and newsletters
- manufacturer manuals
- material safety data sheets (MSDS) and registers
- organisation WHS policies and procedures
- internal risk assessments, job safety analyses (JSAs) and workplace inspections
- internal hazard and incident reports

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS503A Maintain the workplace OHS management system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS503 Maintain WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS503A Maintain the workplace OHS management system

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 include the ability to:

- communicate using appropriate style and format for a range of stakeholders to:
  - evaluate the WHS management system
  - provide information on the effectiveness of the WHS management system in minimising risk
  - identify, plan, implement and monitor improvements
  - convey WHS and other complex/technical information
  - consult and seek input/feedback
  - interact with the workforce to maintain the process that comprise the WHS management system
- analyse WHS data to identify areas for improvement
- create and manage documentation, including:
  - WHS records
  - minutes of meetings and consultations
  - workplace inspection checklists, audits and reports
- write clearly and unambiguously, including:
  - reports
  - policies and procedures
  - WHS information
- develop WHS management system improvement plans
- apply a quality improvement process to implement and monitor improvements
- identify WHS training needs.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to fulfil their job role, including:

- WHS responsibilities of employers, employees, supervisors and contractors, including duty of care responsibilities

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- regulatory requirements for WHS information and consultation and processes and arrangements to meet these obligations
- regulatory requirements for WHS record keeping and reporting
- regulatory requirements for training and licensing relevant to WHS
- elements of a WHS management system and principles and practices of effective WHS management and risk control
- barriers to implementation of WHS, including language and literacy, cultural diversity of workforce and workplace culture in relation to WHS
- sources and types if information that provide realistic information on the performance of the WHS management system
- techniques for analysing WHS data, including simple statistical analysis and graphing of trends
- types of internal and external change that may impact on WHS and WHS compliance
- audit and inspection processes.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.
- 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.
- 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.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMWHS510 Manage risk

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS510A Manage risk

Application

This unit of competency covers the skills and knowledge required to develop, implement and evaluate an organisation-wide risk management plan. Risk management is defined as coordinated activities to direct and control an organisation with regard to risk. It incorporates an assessment of all potential risks facing the organisation and the approach, management components and resources to be applied to the management of risk. It focuses on avoiding/eliminating critical incidents rather than on recovering from a disaster.

This unit of competency applies to managers or work health and safety (WHS) specialists who are developing or maintaining a risk management plan for their site or organisation.

This unit of competency is based on *AS/NZS ISO 31000:2009 Risk management - Principles and guidelines* and can be applied to any aspect of risk in an organisation. When applied to health, safety and environment (HSE) risks the business and other risks consequent on them are also considered.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Develop risk management plan	1.1	Analyse and interpret strategic position and policy on risk management
		1.2	Identify risk management context and potential areas of risk
		1.3	Analyse organisational capability to manage risk and achieve objectives
		1.4	Generate a comprehensive list of risks that could affect the achievement of the organisation's objectives
		1.5	Establish or review risk management policies
		1.6	Evaluate the requirement for training/education for all groups and individuals
		1.7	Access external specialist assistance as required
		1.8	Establish appropriate risk assessment techniques
		1.9	Consult stakeholders in the development of the plan
2	Implement risk management plan	2.1	Define, in consultation with stakeholders, the criteria used to evaluate the significance of risk
		2.2	Evaluate and prioritise risks for treatment
		2.3	Determine and select the most appropriate options for treating risks
		2.4	Implement and monitor risk treatment plan
		2.5	Document strategies for risk treatment options
3	Evaluate risk	3.1	Establish procedures to regularly review risk

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management plan		management activities
	3.2	Ensure stakeholders have input to the review
	3.3	Examine activities that do not achieve their objective/performance outcomes to determine cause
	3.4	Identify targets for improvement and update plan
	3.5	Establish evaluation of risk management as a key component of all projects/activities

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/NZS ISO 31000:2009 Risk management - Principles and guidelines*
- award and organisation agreements and relevant industrial instruments

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state 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.

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

External specialist assistance

External specialist assistance includes:

- any group or individual who has the expertise to assist the organisation to deal with any event/incident which may occur

Risk

Risk includes one or more of the following:

- injury or disease
- environmental factors
- product failure
- financial/economic loss/failure
- damage to property/plant/equipment
- industrial disputes
- professional incompetence
- natural disasters
- security failure, including criminal or terrorist activities
- equipment/system failures
- political events

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS510A Manage risk

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS510 Manage risk

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS510A Manage risk

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 must include the ability to:

- select and apply techniques to develop a risk management plan
- identify and interpret information from a range of internal and external sources
- communicate with a range of stakeholders to:
  - identify and assess impact
  - prioritise risks
  - develop and evaluate treatment options
  - evaluate risk management activities
  - evaluate organisational capability and identify training needs
- plan, implement and monitor risk management activities
- write reports, policies and procedures.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate independently and to solve routine and non-routine problems, including:

- regulatory framework
- legal requirements for operating the business relevant to the area of responsibility
- the legal implications of deeming identified risks as acceptable
- internal or external audit methods
- focus group processes
- risk analysis processes
- criteria for evaluation and prioritisation.

Assessment Conditions

The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

The collection of performance evidence is best done from a report and/or folio of evidence drawn from:

- a single project which provides sufficient evidence of the requirements of all the elements and performance criteria

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- multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.

Assessment should 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 reflecting 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.

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.

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

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MSMWHS601 Develop WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS601A Establish workplace OHS management system

Application

This unit of competency covers the skills and knowledge required to develop the work health and safety (WHS) management system at senior management level, in order to meet legislative requirements and to ensure that the workplace is, so far as is practicable, safe and without risks to the health of employees.

This unit of competency applies to managers and senior technicians who have a WHS responsibility. It typically applies when a WHS management system is being developed, and could be used for a complete review of an existing WHS management system. Develop means to develop initially, or to further develop/improve or maintain an existing WHS management system.

This unit of competency describes WHS requirements applicable for those with managerial responsibilities for development and ongoing management of the WHS management system within the organisation. This may be as a worker or as an owner of a business.

This unit of competency applies within an area of managerial responsibility, which may be an entire organisation or department of an organisation. Roles and responsibilities will vary from organisation to organisation.

This unit of competency applies to organisations where the WHS system with related policies, procedures and programs may or may not be established. Where the WHS system is established, the unit will relate to the review of the WHS management system.

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

Pre-requisite Unit

Nil

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Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Identify needs of the WHS management system	1.1	Analyse the workplace to identify needs and workplace factors that may impact on the design of the WHS management system
		1.2	Clarify WHS legal obligations in relation to the specific workplace
		1.3	Review relevant standards relating to WHS management system
		1.4	Identify links with other functional areas and management systems
		1.5	Seek input from stakeholders on the design of the WHS management system
2	Review the framework for the WHS management system	2.1	Ensure WHS responsibilities and duties are documented and accountability processes are in place
		2.2	Identify and source financial and human resources required for the operation of the WHS management system
		2.3	Review WHS policies and procedures
		2.4	Ensure implications of any proposed changes to the workplace are identified and addressed
		2.5	Recognise limits of own professional expertise and consult WHS specialists as necessary

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3	Develop participative arrangements for the management of WHS	3.1	Develop appropriate participative processes with employees and their representatives in accordance with relevant WHS legislation and industry standards
		3.2	Provide information on WHS to employees in a format that is readily accessible and understandable
		3.3	Promptly and effectively deal with and resolve issues raised through participation and consultation in accordance with procedures for issues resolution
		3.4	Provide information about the outcomes of participation and consultation in a manner accessible to employees
4	Develop risk management processes	4.1	Develop procedures for hazard, incident and injury reporting and investigation
		4.2	Develop procedures for hazard identification, hazard analysis and risk assessment
		4.3	Develop hazard specific risk control measures currently in place to meet legal requirements and minimise risk as far as is practicable
		4.4	Develop procedures for ongoing control of identified hazards and monitoring of the effectiveness of controls
5	Develop and maintain a WHS training program	5.1	Conduct a WHS training needs assessment for the work group that takes account of legislative requirements, internal policies and procedures, skills of work group and risk control requirements
		5.2	Develop and implement a WHS training program to identify and fulfil employee's WHS training needs as a part of the organisation general training program.
		5.3	Coordinate with relevant training experts as necessary
6	Develop and maintain a system for WHS records	6.1	Identify and address legal requirements for record keeping and reporting
		6.2	Identify and access sources of WHS information

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		6.3	Take actions to ensure that records are accurately completed, collected and stored
7	Implement WHS systems, strategies and plans	7.1	Determine WHS priorities in consultation with managers and taking account of participative arrangements in the workplace
		7.2	Develop plans for the implementation of WHS strategies
		7.3	Monitor and update plans for achievement as required

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:

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- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- electricity
- gas and
- gases and liquids under pressure
- structural hazards
- structural collapse
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- limited head spaces or overhangs
- unauthorised personnel
- other hazards that might arise

WHS information sources

WHS information sources include one or more of:

- WHS legislation, codes of practice and Australian and International standards
- WHS regulators
- WorkSafe Australia Guides
- industry bodies
- internet sites, journals and newsletters
- manufacturer manuals
- material safety data sheets (MSDS) and registers
- organisation WHS policies and procedures
- internal risk assessments, job safety analyses (JSAs) and workplace

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inspections
- internal hazard and incident reports

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAPMOHS601A Establish workplace OHS management system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMWHS601 Develop WHS management system

Modification History

Release 1. Supersedes and is equivalent to MSAPMOHS601A Establish workplace OHS management system

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 include the ability to:

- ascertain requirements for development of WHS management system
- develop appropriate documentation, including:
  - policies and procedures
  - training material
- identify and source financial and human resources
- develop training strategy to address WHS training requirements
- consult and negotiate to implement or review policies and procedures
- apply a systematic process to planning and implementation or review of WHS systems.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to fulfil their job role, including:

- regulatory requirements relevant to role, including duty of care responsibilities
- requirements for WHS record keeping and reporting
- principles and practices of effective WHS management and risk control
- elements and requirements of a WHS management system
- other management systems requiring interface or integration with the WHS management system
- barriers to implementation of WHS, including language and literacy, cultural diversity of workforce and workplace culture in relation to WHS
- relevant organisation procedures, practices, codes and signs/symbols
- organisations goals, targets and measures
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should 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 reflecting 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.
- 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.
- 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

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MSS015022 Develop strategies for more sustainable use of resources

Modification History

Release 1. Updated unit code. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to identify strategies for more sustainable uses of resources. The unit includes the identification of waste (muda) as part of a strategy for achieving better sustainability outcomes in a process as well as quantifying theoretical and actual resource (including energy) consumption.

This unit applies inside organisations and their value chains and specifically applies to the use of resources as part of an overall response to improving sustainability.

Where the carbon footprint (or water footprint or similar) of an organisation or value chain is known, the unit can be applied to developing strategies for the reduction of that footprint. A manager or technical specialist who has a major responsibility for sustainability as part of a broader work role would typically undertake this, or sustainability may be their primary work responsibility.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Sustainable operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Quantify**	1.1	Identify all significant resources used by process

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	resource consumption	1.2	Identify consumption measurements available for each resource
		1.3	Quantify consumption for each resource
2	**Quantify resource loss**	2.1	Determine theoretical consumption of each resource
		2.2	Compare theoretical consumption with actual consumption
		2.3	Quantify loss (emission) for each resource
3	**Recommend strategies for reducing muda (waste)**	3.1	Short-list high emission process steps
		3.2	Analyse process to identify emission steps or locations
		3.3	Determine root cause of emission
		3.4	Investigate methods for reducing emission
		3.5	Develop strategies and recommendations for improvement
4	**Prepare resources use audit report**	4.1	Identify purpose of report and key stakeholders
		4.2	Compile data, implications and recommendations
		4.3	Consult with stakeholders
		4.4	Write and present report

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.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS015002 Develop strategies for more sustainable use of resources.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS015022 Develop strategies for more sustainable use of resources

Modification History

Release 1. Updated unit code. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- quantified significant resource consumption and emission using materials balancing for at least 1 organisation or value chain, including developing strategies for reducing emissions and preparing and presenting a resources use audit report.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the concept of muda (waste) and muda categories
- muda reduction methods and strategies
- methods and uses of material balancing
- methods and uses of energy balancing
- methods of comparing theoretical with actual resource consumption
- methods for mapping processes and resources consumed
- methods of measuring actual resource usage
- AS/NZS ISO 14001 Environmental Management Systems or its authorised replacement.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402002 Sustain process improvements

Modification History

Release 1. Supersedes and is equivalent to MSS402002A Sustain process improvements

Application

This unit of competency covers the skills and knowledge required by an individual to prevent process improvements in their own work from slipping back to former practices or digressing to less efficient practices.

This unit applies to organisations implementing competitive systems and practices and continuous improvement. It covers the skills needed to ensure that process improvements are sustained and opportunities taken to suggest further improvements.

Improvement initiatives can be made by any of a number of methods and by teams or individuals. The unit assumes that desired levels of performance or quality are known to employees.

The unit can be applied to all areas of an organisation, including production, maintenance, logistics and office functions.

This unit requires the application of skills associated with problem solving, initiative and enterprise and self-management in order to understand implement and monitor improvement practices. It also requires the ability to identify and address personal skill gaps in order to manage own ability to implement change.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

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Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Examine previous improvements**	1.1	Identify impact of previous process improvements to equipment, operations, services or products in own work area.
		1.2	Identify improvements where objectives have not been met.
2	**Implement corrective actions**	2.1	Identify corrective actions that can be taken by self on process improvements that have not met objectives.
		2.2	Obtain any required approvals.
		2.3	Identify any additional, personal skill gaps and seek skill development.
		2.4	Adopt improved processes.
3	**Check changes**	3.1	Identify claimed improvements.
		3.2	Identify methods of observing and measuring claimed improvements in own work area.
		3.3	Check if claimed improvements are occurring and report problems in accordance with procedures.
4	**Check for further improvements**	4.1	Look for areas of possible further improvement.
		4.2	Discuss further improvements with peers and supervisors.
		4.3	Take action to implement improvements in accordance with procedures.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Customers include one or more of:	• internal customers • external customers sufficiently close to the individual’s work as to be easily identifiable • final customers used as the basis for the identification of value and waste.
Suppliers include	• internal suppliers

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one or more of:	• external suppliers sufficiently close to the individual's work as to be easily identifiable.
Measuring improvements includes one or more of:	• personally taking measurements • arranging for measurements to be taken/made by appropriate personnel.
Procedures (written, verbal, visual, computer based, etc.) include one or any combination of:	• work instructions • standard operating procedures (SOPs) • safe work method statements • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant.
Corrective actions to sustain improvements include one or more of:	• techniques for preventing mistakes by designing the operations process, equipment and tools so that an operation literally cannot be performed incorrectly (e.g. baka-yoke) • techniques that generate warning signals where a mistake is about to be performed (poka-yoke) • administrative techniques, such as procedure/work instruction changes • skilling techniques, such as training, mentoring, demonstration • process techniques, such as changing the process/conditions/variables.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402002A Sustain process improvements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402002 Sustain process improvements

Modification History

Release 1. Supersedes and is equivalent to MSS402002A Sustain process improvements

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 include the ability to examine three (3) or more previous improvements, including one (1) or more where improvement objectives have not been met, and to:

- identify corrective actions that can be taken by self
- implement those corrective actions
- check whether the claimed improvements have occurred
- check for further improvements.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- muda (waste)
- indicators of processes not delivering claimed improvements
- baka-yoke and poka-yoke techniques.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include actions to sustain process improvements in own workplace
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- Assessment should occur in operational workplace situations.

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- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402031 Interpret product costs in terms of customer requirements

Modification History

Release 1. Supersedes and is equivalent to MSS402031A Interpret product costs in terms of customer requirements.

Release 2. Unit code in Application updated. Equivalent outcome.

Application

This unit of competency covers the skills and knowledge required by an individual to be able to identify the major cost components of either products or processes, the basic relationship of these to customer benefit, and use this to help minimise waste (defined as anything not delivering value as defined by the customer). It has a different focus to *MSS402082 Apply cost factors to work practices*, which focuses on costs in isolation, whereas this unit regards all costs not directly leading to customer benefit as waste.

This unit applies to an individual who uses their understanding of the customer's requirements of the product or process being undertaken as the basis for investigating work processes to identify waste sources and then takes action relevant to their level of competency and authority to reduce this waste. It requires an understanding of both the cost factors in the products they make and also the benefits which the customer derives from the product.

This competency may be performed individually or in a team-based environment.

This unit requires the application of skills associated with analysis and problem solving to identify waste and determine ways to minimise waste. This unit requires initiative and enterprise and application of learning in concepts of waste and waste minimisation.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify cost components deriving from customer benefit and other costs**	1.1	Identify customer features/benefits in product or process being undertaken.
		1.2	Identify cost components which deliver customer features/benefits and those which do not.
2	**Compare required performance of product or process steps with actual performance**	2.1	Identify performance required to meet customer needs in own work and that of team.
		2.2	Identify actual performance.
		2.3	Compare cost components of products or process with current customer-related targets.
		2.4	Separate costs components into those that contribute to customer features/benefits and those that do not.
		2.5	Determine non-contributing cost components which are under control of the individual or team.
3	**Minimise waste**	3.1	Recommend changes to eliminate or reduce waste.
		3.2	Adopt changes which minimises waste.
		3.3	Monitor effect of changes to ensure gains are made against customer features/benefits.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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

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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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just In Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Customer features/ benefits include all of:

- characteristics of the product or service which the customer perceives as meeting their need
- characteristics of the product or service which the customer perceives as adding value
- financial or features items which the customer perceives and a benefit.

Performance includes all of:

- takt - the allowable time to produce one product at the rate and quality customers are demanding it
- the rate of output of the plant compared to the takt time.

Customer-related targets includes all of:

- internally set financial targets that contribute to meeting customer features/benefits
- operational targets that contribute to meeting customer features/benefits
- other targets that contribute to meeting customer features/benefits.

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Contributing cost components include all of:	• costs that make a direct contribution to customer features/benefits. • costs that need to be incurred (although they may be minimised) in order to gain the customer feature/benefit.
Non-contributing cost components include all of:	• costs that do not contribute to customer features/benefits • costs that must be maintained, such as regulatory compliance costs which do not contribute to customer features and so should be minimised • costs that neither contribute to customer features/benefits nor must be maintained (muda) and so should be eliminated if possible.
Muda (waste) includes all of:	• any activity which does not contribute to customer or organisation benefit/features in the product • activities which do not yield any benefit to the organisation or any benefit to the organisation's customers • excess production and early production • delays • movement and transport • poor process design • inventory • inefficient performance of a process • making defective items.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402031A Interpret product costs in terms of customer requirements

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402031 Interpret product costs in terms of customer requirements

Modification History

Release 1. Supersedes and is equivalent to MSS402031A Interpret product costs in terms of customer requirements.

Release 2. Unit code in Application updated. Equivalent outcome.

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 include the ability, on **one (1)** or more occasions to recommend muda reduction related to their workplace, and to:

- identify and distinguish between cost components leading to customer benefit or otherwise
- take steps to minimise muda in their workplace.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- contributions towards customer perceived benefit
- concepts of expense, income and capital
- fixed and variable cost components relevant to own work:
  - power/energy
  - materials, plant and equipment
  - production or process time, including impact of salary and wages
  - office expenses
  - government taxes and charges
- relative impact of each of these
- financial and non-financial impacts of cost reductions
- the difference between internally and externally controlled costs
- difference between overhead, labour and consumables.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:

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  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402040 Apply 5S procedures

Modification History

Release 1. Supersedes and is equivalent to MSS402040A Apply 5S procedures

Release 2. Duplicated performance Criteria removed. Equivalent outcome.

Application

This unit of competency covers the skills and knowledge required by an individual to apply 5S procedures to their own job and work area. The unit assumes the individual has a particular job and an allocated work area and that processes in the work area are known by the individual.

This unit applies to an individual in an organisation who works in an operational position as part of production, maintenance, logistics, etc. The unit can also apply to individuals in other organisations who have a discrete role and responsibility for individually managed processes.

This unit applies where an organisation has decided to embark on a competitive systems and practices strategy and as part of this has adopted the philosophy of 5S as one of the tools to improve performance. The employee needs to apply 5S to their job and work area and maintain the housekeeping and other standards set by 5S.

This unit requires the application of skills associated with planning and organising, problem solving and self-management, in order to identify and implement 5S housekeeping practices.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

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

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1	**Sort needed items from unneeded**	1.1	Identify all items in the work area.
		1.2	Sort items to achieve deliverables and value expected by downstream and final customers.
		1.3	Sort items required for regulatory or other required purposes.
		1.4	Place any non-essential item in an appropriate place other than the workplace.
		1.5	Regularly check that only essential items are in the work area.
2	**Set the workplace in order**	2.1	Identify the best location for each essential item.
		2.2	Place each essential item in its assigned location.
		2.3	After use immediately return each essential item to its assigned location.
		2.4	Regularly check that each essential item is in its assigned location.
3	**Shine the work area**	3.1	Keep the work area clean and tidy at all times.
		3.2	Conduct regular housekeeping activities during shift.
		3.3	Ensure the work area is neat, clean and tidy at both beginning and end of shift.
4	**Standardise activities**	4.1	Follow procedures.
		4.2	Follow checklists for activities, where available.
		4.3	Keep the work area to specified standard.
5	**Sustain the 5S system**	5.1	Clean up after completion of job and before commencing next job or end of shift.
		5.2	Identify situations where compliance to standards is unlikely and take actions specified in procedures.

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5.3 Inspect work area regularly for compliance to specified standard.

5.4 Recommend improvements to lift the level of compliance in the workplace.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

5S includes all of:

- sort

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- set in order
- shine
- standardise
- sustain.

Sort includes all of:

- separating necessary from unnecessary items (equipment and supplies)
- keeping only what is absolutely necessary for the work processes that comprise the job
- disposing of (or relocating) all other items.

Set in order includes all of:

- assigning required equipment and materials appropriate locations in the work area
- consideration of frequency of use, ergonomics and work health and safety (WHS)
- provision of facilities to maintain the locations.

Shine includes one or more of:

- keeping the work area clean at all times which should be carried out to a regular daily schedule against allowed time, usually at the end of the day or of a particular process
- keeping work area organised
- noting any signs of wear, damage, leakage, safety risks or other issues that require immediate attention.

Best location includes one or more of:

- changes to the layout of furniture
- arrangement of equipment
- provision of services
- location of personnel.

Standardising includes one or more of:

- activities that help maintain the order and the housekeeping standards
- using procedures and checklists developed from a procedure.

Sustain includes one or more of:

- making sure that daily activities are completed every day regardless of circumstance
- cleaning up after a job
- undertaking inspections, including:
- informal inspections carried out often, at least weekly
- formal inspections carried out at least monthly

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- generating continuous improvement actions from daily activities
- following up specific actions to generate continuous improvement.

Items in work area include one or more of:

- tools
- jigs/fixtures
- materials/components
- plant and equipment
- manuals
- personal items (e.g. bags, lunch boxes and posters)
- safety equipment and personal protective equipment (PPE)
- other items which happen to be in the work area.

Procedures (written, verbal, visual, computer based, etc.) include one or more of:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402040A Apply 5S procedures

Release 2. Equivalent to MSS402040 Apply 5S procedures Release 1.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402040 Apply 5S procedures

Modification History

Release 1. Supersedes and is equivalent to MSS402040A Apply 5S procedures

Release 2. Duplicated performance Criteria removed. Equivalent outcome.

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 include the ability, in one (1) or more allocated areas, to:

- implement and sustain 5S in own workplace
- identify own tasks and responsibilities
- contribute suggestions for improvement.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- purpose of 5S in the workplace
- meaning and application of 5S steps to own workplace and job
- principles of efficient workplace organisation
- identifying waste (muda)
- procedures for recommending improvements.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the application of 5S procedures in a work area where 5S has not previously been undertaken, or, demonstration of sustaining 5S principles in a work area that has already undergone prior 5S procedures
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.

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- Assessment should occur in operational workplace situations. 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402050 Monitor process capability

Modification History

Release 1. Supersedes and is equivalent to MSS402050A Monitor process capability

Application

This unit of competency covers the skills and knowledge required for gathering of data and the interpretation of simple information to determine the compliance of the process and the taking of action as defined by the procedures where the information reveals the process is out of control parameters.

This unit applies to an individual in an organisation adopting specific competitive systems and practices, usually either six sigma or statistical process control/three sigma, as a means of determining and improving the capability of their process to customer requirements. The individual is involved in collecting specified data and performing specified manipulations to the data (typically by plotting on a chart or by entering into a nominated computer program). The information is typically presented to team members in terms of graphs/charts which they are expected to interpret at a basic level and then take action in accordance with procedures to restore the process to being under control parameters.

This unit requires the application of skills associated with entering and monitoring operational data and information and requires initiative, enterprise and problem solving in identifying production variations and making improvement recommendations.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Collect and process data**	1.1	Take specified measurements/readings/observations, as required.
		1.2	Enter data in log, computer or other record.
		1.3	Manipulate and/or chart data as required by procedures.
2	**Identify variations that are not random and take action**	2.1	Examine chart and/or reliability information.
		2.2	Distinguish between random variations and those with an identifiable cause.
		2.3	Take action specified in procedures when a variation with an identifiable cause occurs.
3	**Assist in process improvement**	3.1	Collect data for process capability improvement trials.
		3.2	Make recommendations for improvement.
		3.3	Implement revised capability monitoring procedures.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems	• lean operations

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and practices include one or more of:	• agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Procedures (written, verbal, visual, computer based, etc.) include one or any combination of:	• work instructions • standard operating procedures (SOPs) • safe work method statements • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant.
Process capability includes one or more of:	• the capability of the process to deliver to customer defined requirements • process stability against standardised practices and documentation to eliminate variation against customer requirements • statistical capability to deliver product within a specified range • a statistical technique to determine the range within which a product might be expected to fall.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402050A Monitor process capability

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Links

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Assessment Requirements for MSS402050 Monitor process capability

Modification History

Release 1. Supersedes and is equivalent to MSS402050A Monitor process capability

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 include the ability to assist in one (1) or more process improvements and to routinely:

- collect and process data
- identify non-random variations and take the action specified in the procedures
- make recommendations for improvements.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- defects and defective product
- variation and the related statistical distribution
- control charting (or similar) methods
- analysis of information to identify trends or other non-random results
- determination of identifiable causes from variation information
- process capability determination from variation data.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include routine collection of data and identification of non-random variation in own workplace
  - must include participation in a process capability improvement project

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  - will typically include the use of appropriate statistical tools, aids and apps.
- Assessment should occur in operational workplace situations.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402051 Apply quality standards

Modification History

Release 2. Mapping updated to include superseded unit (not equivalent to LMTGN2002B Apply quality standards)

Release 1. Supersedes and is equivalent to MSS402051A Apply quality standards

Application

This unit of competency covers the skills and knowledge required to apply quality standards to work operations in an organisation. The unit is designed to complement competitive systems and practices units.

This unit applies to an individual who is expected to take responsibility for the quality of their own work, and to take actions specified in the procedures and within the scope of their job and authority to ensure that quality standards are met.

This unit requires the application of skills associated with interpreting and applying workplace standards and identifying and addressing problems that interfere with quality outcomes. The unit requires initiative, enterprise and self-management to ensure quality standards are achieved.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Assess own work**	1.1	Continuously check completed work against workplace standards relevant to the operation being undertaken.
		1.2	Demonstrate an understanding of how the work activities and completed work relate to the next production process or processes and to the final products or services concerned.
		1.3	Identify and isolate faulty components, products or processes.
		1.4	Record and/or report faults and any identified causes to the supervisor concerned, where required, in accordance with workplace procedures.
2	**Assess quality of received components, parts or materials**	2.1	Continuously measure/check received components, parts, materials, information, service or final products against workplace standards and specifications for conformance.
		2.2	Demonstrate an understanding of how the received components, parts or materials, information or service relate to the current operation and how they contribute to the final quality of the product or service.
		2.3	Identify and isolate faulty components, parts, materials or information that relate to the operator's work.
		2.4	Record and/or report faults and any identified causes in accordance with workplace procedures.
		2.5	Identify causes of any identified faults and take corrective action as specified in workplace procedures.
3	**Investigate causes of quality deviations**	3.1	Record information on quality and other indicators of process performance.
		3.2	Investigate and report causes of deviations from specified quality standards for components.
		3.3	Recommend suitable preventative action based on workplace quality standards and the identified causes of deviations from specified quality standards of materials.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Quality parameters include one or more of:

- finish
- size
- durability
- product or process variations
- materials

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	• alignment • colour • damage and imperfections • time • is complete/contains all required information/data • complies to template • uses the correct styles and formats.
Quality checks include one or more of:	• visual inspection • physical measurements • chemical tests • checks against patterns, templates, styles, formats and guides • processing time.
Materials include one or more of:	• physical raw materials • orders, forms and other documentation • services required for undertaking an operation (e.g. power, water, compressed air and fuel).
Procedures (written, verbal, visual, computer based, etc) include one or more of:	• work instructions • standard operating procedures (SOPs) • safe work method statements • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant.
Indicators of production performance include one or more of:	• number of items/production rate • delays and causes of delays (where known) • other information as specified in the procedures.
Data entry/recording includes one or more of:	• keyboard • written (including ticks or signs) • verbal.
Sources of information/ documents include one	• quality and Australian Standards and procedures • work instructions, patterns, designs and recipes

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or more of:	• organisation work procedures • manufacturer instructions for materials and equipment • organisational or external personnel • customer requirements.
Investigate and report requires following set procedures which include one or more of:	• verbal instructions • documented procedures • other quality procedures as implemented within an organisation or work environment.
Workplace context includes one or more of:	• work organisation procedures and practices relating to the manufacture and quality outcomes for products • conditions of service, legislation and industrial agreements, including: • workplace agreements and awards • federal or state/territory legislation • standard work practice.
Reporting/communication includes one or more of:	• verbal and written communication in accordance with organisational policies and procedures • oral, written or visual communication, including simple data.
Being responsible for the maintenance of own work quality includes one or more of	• contributing to the quality improvement of team or section output, where necessary, in accordance with workplace procedures • following safety, environmental, housekeeping and quality procedures as specified by materials/machine/equipment manufacturers, regulatory authorities and the organisation.
Applicable regulations and legislation include one or more of	• work health and safety (WHS) legislation relevant to workplace activities • workers compensation legislation.

Unit Mapping Information

Release 2. Mapping updated to include supersedes and not equivalent to LMTGN2002B Apply quality standards

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Release 1. Supersedes and is equivalent to MSS402051A Apply quality standards

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402051 Apply quality standards

Modification History

Release 2. Mapping updated to include superseded unit (not equivalent to LMTGN2002B Apply quality standards)

Release 1. Supersedes and is equivalent to MSS402051A Apply quality standards

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 include the ability, for one (1) or more products/processes, to:

- check and measure relevant quality parameters
- interpret results of quality checks in terms of specifications, patterns and work standards
- take required action where standards of materials, component parts, final product or work processes are found to be unacceptable
- maintain accurate records.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- relevant quality standards, policies and procedures
- relevant production processes, materials and products
- relevant measurement techniques and quality checking procedures
- reporting procedures.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the application of quality standards to own workplace

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    - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- Assessment should occur in operational workplace situations. 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
    - relevant VET or other qualification/Statement of Attainment AND/OR
    - relevant workplace experience
- Currency can be demonstrated through:
    - performing the competency being assessed as part of current employment OR
    - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402080 Undertake root cause analysis

Modification History

Release 1. Supersedes and is equivalent to MSS402080A Undertake root cause analysis

Application

This unit of competency covers the skills and knowledge required to undertake root cause analysis (RCA). This unit also covers the competencies needed by operators to contribute to an advanced maintenance strategy using RCA coupled with diagrams and charts.

This unit applies to individuals working in an organisation that is applying competitive systems and practices strategies. The unit applies to the formal problem solving to root cause that the individual must undertake in their own work area or where the individual contributes to problem solving to root cause as part of a team.

This unit requires an ability to seek and apply information from a variety of sources in order to inform RCAs. Initiative and enterprise is also required to identify quick fix and permanent solutions to problems.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

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

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1	**Recognise problems**	1.1	Identify features or occurrences indicative of a problem.
		1.2	Use appropriate tools, techniques and charts to define the problem.
2	**Implement quick fix**	2.1	Recommend a quick fix within the scope of competency and authority.
		2.2	Use technology or processes relevant to the problem to implement quick fix.
3	**Determine root cause**	3.1	Identify a range of possible causes.
		3.2	Gather data and other information to eliminate or confirm possible causes.
		3.3	Use available data and information to link causes and effects.
		3.4	Seek assistance to obtain additional information if problem is beyond own competency/authority.
		3.5	Identify root cause.
4	**Develop permanent solution**	4.1	Identify a range of methods to eliminate the root cause or break the cause tree.
		4.2	Select the most appropriate solution.
		4.3	Liaise with relevant people.
		4.4	Recommend or implement solution within the limits of competency and authority.
		4.5	Monitor impact of solution and make further recommendations, as required.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Problems include one or more of:

- variation to normal plant or equipment operation
- unplanned or non-conforming process or operations outcomes
- out of specification products
- excess scrap
- accidents and emergencies
- regulatory breaches
- customer returns and complaints
- reduction or loss of sales.

Techniques/charts include one or more

- control charts
- Pareto charts

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of:

- run charts
- flow charts
- cause and effect diagrams
- tree diagrams
- 5 Whys analysis
- organisation specified/mandated methods.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402080A Undertake root cause analysis

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402080 Undertake root cause analysis

Modification History

Release 1. Supersedes and is equivalent to MSS402080A Undertake root cause analysis

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 include the ability, for one (1) or more problems, to:

- undertake problem identification
- use appropriate processes to achieve root cause identification
- recommend solutions and implementation procedures to problems within own area
- monitor implementation of solutions.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- methodology of root cause analysis, including:
  - difference between quick fix and root cause elimination
  - breaking of causal tree
- indicators of problems and variances to normal operation
- relevant analysis tools (e.g. Pareto charts, 5 Whys).

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include a root cause analysis in own workplace
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.

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- Assessment should occur in operational workplace situations.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402081 Contribute to the application of a proactive maintenance strategy

Modification History

Release 1. Supersedes and is equivalent to MSS402081A Contribute to the application of a proactive maintenance strategy

Application

This unit of competency covers the skills and knowledge required by an individual to make a positive contribution to proactive maintenance strategies, including actions that contribute to equipment uptime and overall equipment effectiveness (OEE). This unit applies in an organisation which is following a predictive, preventative or reliability-centred maintenance strategy and which requires commitment from all employees. The employee should 'own' their equipment/plant and take an active part in the implementation of the strategy within the scope of their authority.

This unit requires the application of skills associated with accessing and maintaining equipment/plant documentation. It also requires problem solving, initiative and enterprise to continually monitor and maintain operational performance of equipment/plant used in work role.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Maintain equipment/plant**	1.1	Keep equipment/plant within area of responsibility clean.
		1.2	Ensure equipment/plant is serviced and adjusted, as required, in accordance with procedures and own level of responsibility.
		1.3	Access manufacturer manuals and specifications, where required, to expand knowledge on the maintenance of equipment/plant.
		1.4	Access and update documentation on equipment/plant operation and maintenance in accordance with workplace procedures.
2	**Monitor operation of equipment/plant**	2.1	Regularly check key conditions of the equipment/plant as defined in workplace procedures.
		2.2	Regularly check equipment/plant OEE.
		2.3	Note any deviation from conditions specified in procedures.
3	**Identify deviations and patterns**	3.1	Identify any previous occurrences of a deviation.
		3.2	Identify any related deviations which have occurred.
		3.3	Identify any unusual occurrence which may be related to a deviation.
4	**Take action appropriate to competency and authority on deviation**	4.1	Liaise with relevant people regarding the deviation and the solution.
		4.2	Implement solution and/or assist with the implementation of the solution, as appropriate.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • OEE • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Uptime includes one or more of:	• the overall availability of the plant • the inverse of downtime or the unavailability of the plant • the fraction, percentage or time the plant is available for production.
Procedures (written, verbal, visual, computer based, etc.) include one or any combination of:	• work instructions • standard operating procedures (SOPs) • safe work method statements • formulas/recipes • batch sheets • temporary instructions

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- any similar instructions provided for the smooth running of the plant.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402081A Contribute to the application of a proactive maintenance strategy

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402081 Contribute to the application of a proactive maintenance strategy

Modification History

Release 1. Supersedes and is equivalent to MSS402081A Contribute to the application of a proactive maintenance strategy

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 include the ability to monitor equipment/plant in one (1) or more areas, and to:

- maintain the equipment/plant to the required standard
- identify deviations in OEE requiring action
- take the action required by the procedures.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role under routine only supervision, including:

- interpretation of trends or other non-random variation
- determining OEE (availability x performance x quality rate) and uptime metrics
- principles of operation of plant/equipment and factors likely to cause deviations in performance
- identifying deviations requiring action
- appropriate actions for dealing with deviations.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the application of proactive maintenance in own workplace
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.

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- Assessment should occur in operational workplace situations.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402082 Apply cost factors to work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to identify cost components in work practices and determine, in general terms, the cost impacts of alternative actions.

The unit applies to assessing the relative costs of the alternatives and using this as one of the key factors in making decisions. Decisions are made within the scope of the employee's authority and according to procedures. Typical decisions include those that contribute to the efficient organisation of own work and the improvement of production time and cycle times.

Employees are required to use problem solving to identify cost factors and cost implications of own work and self-management to apply cost-effective practices.

This unit applies to an individual who is required to contribute to, and be involved in, the assessment of cost factors in their work. This may be done individually or in a team environment.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Identify the major cost**	1.1 Identify cost components in the product or process in own work area

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
	components of product or process in own work area	1.2 Recognise the impact of current or alternative actions on costs
2	**Identify constraints to cost-efficiency**	2.1 Identify required production or process rate and major costs 2.2 Identify costs factors under individual or team control 2.3 Relate identified costs factors to impact on overall cost of production or process 2.4 Identify cost factors that are a constraint to cost-efficiency in own work area
3	**Apply cost-efficient work practices**	3.1 Identify and explain to relevant people the implications of actions and changes to improve cost-efficiency in simple financial terms 3.2 Identify non-financial implications of proposed changes in discussion with relevant people 3.3 Select actions which minimise overall costs 3.4 Monitor actions to ensure cost-efficiency in own work area is maintained

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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402030 Apply cost factors to work practices.

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Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402082 Apply cost factors to work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified cost factors and cost implications of at least 1 product or process in own work and applied cost-effective practices.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- concepts of expense, income and capital
- relative impact of fixed and variable cost components relevant to own work, including:
  - power and energy
  - materials, plant and equipment
  - production or process time, including impact of salary and wages
  - office expenses
  - government taxes and charges
- financial and non-financial impacts of cost reductions
- the difference between internally and externally controlled costs
- difference between overhead, labour and consumables.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS402083 Use planning software systems in operations

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to access planning software (often known as Enterprise Resource Planning (ERP), Materials Resource Planning (MRP and MRPII), and often by a proprietary name, to make routine business decisions required of the person as a regular part of their job.

This unit applies to an individual in an organisation using a planning software system and who must interface with that system. The unit applies to both accessing information from the planning software system and using it as an aid to decision making. This unit requires the application of communication, planning, and problem solving associated with using planning software in own work.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Use interface**	1.1	Identify terminals relevant to own workstation and functions
		1.2	Use peripherals to access system

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.3	Navigate through system and screens to find program menu and data relevant to own work
		1.4	Identify and input information on own work processes at required frequency and to required detail
		1.5	Access message section and read and acknowledge messages
		1.6	Identify problems and make suggestions for improvements to relevance of planning software to own work
2	**Access information**	2.1	Identify work processes that require information from planning software system
		2.2	Obtain data and information on current operations from the planning software system
		2.3	Identify the status of items in the value stream
		2.4	Access and read historical data and information
		2.5	Read and interpret information and identify and prioritise actions required in response to information
3	**Take action in accordance with procedures**	3.1	Take action in response to information obtained from planning software
		3.2	Follow up to ensure anticipated results have occurred
		3.3	Record adjustments and variations
		3.4	Identify any learning needs to use planning software and seek support

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS402060 Use planning software systems in operations.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS402083 Use planning software systems in operations

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit and:

- used planning software systems for at least 3 different purposes, utilising outcomes to aid decision making.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- planning software system and operation, including:
  - terminal locations and types
  - security and access arrangements
  - information held in planning software relevant to own work
  - data collection methods for operations in work area
  - assistance arrangements for users of planning software
  - business activities exercised with the planning software system
- procedures for recommending improvements
- data and information sources.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of facilities, equipment and resources, including:
  - planning software systems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS403011 Facilitate implementation of competitive systems and practices

Modification History

Release 1. Supersedes and is equivalent to MSS403011A Facilitate implementation of competitive systems and practices

Application

This unit of competency covers the skills and knowledge required by individuals who facilitate, lead or mentor others in competitive systems and practices implementation in a work area.

This unit applies to people responsible for facilitating others in implementing competitive systems and practices in their work. It may apply to formally designated team leaders or people given special roles in the implementation process that go beyond their own work and which involve guiding, facilitating or mentoring others. The unit applies to competitive systems and practices implementation activities at the work area or section level.

The unit requires an individual to integrate a range of competitive systems and practices knowledge and skills as part of their role. The unit covers assisting others to understand and apply a holistic view of their job and their role within an organisation, including the objectives that must be met as part of competitive systems and practices used by the organisation.

This unit requires the application of skills associated with communication, teamwork, problem solving, initiative and enterprise, planning and organising, and self-management. This unit has a strong emphasis on planning and implementation, and also requires an ability to learn from experience and feed new information back into strategies to improve own performance and that of others.

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

Pre-requisite Unit

Nil

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Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Facilitate the development of process and competitive systems and practices knowledge**	1.1	Ensure necessary technical documentation and information about the process and competitive systems and practices is available.
		1.2	Assist and mentor others in accessing information.
		1.3	Identify work activities which may inhibit the ongoing development of competitive systems and practices skills and knowledge of others.
		1.4	Arrange for the provision of workforce development and training for self and others, as appropriate.
		1.5	Encourage others to apply technical knowledge to the improvement process.
2	**Facilitate commitment to efficiency improvements**	2.1	Ensure budgets, operating procedures and other related documentation is available.
		2.2	Assist others to apply this information to their work responsibilities.
		2.3	Encourage the identification of waste.
		2.4	Encourage an environment where efficiency improvements are recommended by fellow employees.
3	**Encourage a competitive systems and**	3.1	Encourage and, where necessary, develop communications between specialists and work group members.

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	practices approach to work	3.2	Lead development of strategies to monitor and deal with identified waste issues.
		3.3	Resource and encourage other employees to identify and take action on potential problems.
		3.4	Arrange for workforce development and training for self and others, as required, in relevant competitive systems and practice procedures and techniques.
		3.5	Guide others in relating identified problems to the maintenance strategy, and developing any required changes, to ensure awareness, learning and commitment.
4	**Implement process and organisation improvements**	4.1	Plan the implementation of work group suggestions and externally suggested improvements.
		4.2	Facilitate commitment to, and involvement in, the implementation planning of improvements and to follow improvements to their conclusion.
		4.3	Encourage the application of the 'plan, do, measure, improve, control' approach to the job.
		4.4	Arrange for workforce development and training, as required, to facilitate continued involvement by others in improvement processes.
		4.5	Involve work group and other key personnel in identification of skill needs and means of skills acquisition to fill any identified gaps.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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

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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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Budgets include one or more of:	• financial • time • materials/products • other business plans which are relevant to the team and the work area.
Categories of waste include one or more of:	• excess production and early production • delays • movement and transport • poor process design • inventory • inefficient performance of a process • making defective items • activities which do not yield any benefit to the organisation or any benefit to the organisations customers.
Key reliability issues	• cleanliness

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include one or more of:	• poor lubrication • incorrect adjustment • poor training and instructions for employees.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403011A Facilitate implementation of competitive systems and practices

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS403011 Facilitate implementation of competitive systems and practices

Modification History

Release 1. Supersedes and is equivalent to MSS403011A Facilitate implementation of competitive systems and 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 and include the ability, for three (3) or more organisation improvements which include the facilitation of competitive systems and practices, to:

- identify processes and products of the organisation and work area
- analyse future skill development needs of work group
- mentor effectively in a one-on-one situation
- facilitate communication between work group and external competitive systems and practices specialists and managers
- lead work group in identifying efficiency improvements and elimination of waste.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role independently, including:

- information technology systems used in the organisation
- features of competitive operational practices in own work area
- monitoring and data gathering systems in work area (e.g. SCADA, ERP and MRP)
- methods of gathering data against key performance indicators (KPIs)
- facilitation techniques to encourage work group development and improvement.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must include facilitation of competitive systems and practices implementation in own workplace
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- Assessment should occur in operational workplace situations.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS403040 Facilitate and improve implementation of 5S

Modification History

Release 1. Supersedes and is equivalent to MSS403040A Facilitate and improve implementation of 5S

Application

This unit of competency covers the skills and knowledge required by an individual to facilitate the implementation and improvement of the 5S by self and others in a team or work area. The facilitation may be undertaken by formally designated supervisory staff, such as team leaders or other individuals in a competitive systems and practices implementation role, who need to provide support and encouragement to others to facilitate the achievement of 5S outcomes in the workplace.

This unit requires the application of skills associated with communication, teamwork, problem solving, initiative and enterprise, planning and organising, and self-management in order to provide leadership in a 5S environment. This unit has a strong emphasis on planning and change management, but also requires an ability to learn from experience and feed new information back into strategies to improve performance.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

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

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1	**Facilitate the set-up of 5S**	1.1	Assist others to determine what are necessary and unnecessary items in the work area.
		1.2	Assist others to determine optimum assigned location for all necessary items.
		1.3	Liaise with relevant production and work health and safety (WHS) personnel in determining optimum locations.
		1.4	Assist others to determine optimum location for unnecessary items.
		1.5	Assist others to determine 5S schedule.
		1.6	Assist others to achieve the required level of skill.
2	**Facilitate the implementation of 5S**	2.1	Ensure procedures reflect 5S practices.
		2.2	Assess skill base of team or work group members in 5S and arrange for any required training.
		2.3	Ensure that any damage and/or safety risks reported by the team or work group are addressed through correct mechanisms.
3	**Monitor 5S**	3.1	Check work area for 5S implementation as part of normal routine.
		3.2	Identify non-conformances.
		3.3	Negotiate solutions to non-conformances.
4	**Improve 5S**	4.1	Work with others to find areas for improvement.
		4.2	Assist others to develop improvement solutions.
		4.3	Facilitate the availability of resources required for the improvement solution.
		4.4	Facilitate the implementation of the improvement solution.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Procedures (written, verbal, visual, computer based, etc.) include one or more of:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

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5S includes all of:	• sort • set in order • shine • standardise • sustain.
Sort includes all of:	• separating necessary from unnecessary items (equipment and supplies) • keeping only what is absolutely necessary for the work processes that comprise the job • disposing of (or relocating) all other items.
Set in order includes all of:	• assigning required equipment and materials appropriate locations in the work area • consideration of frequency of use, ergonomics and WHS • provision of facilities to maintain the locations.
Shine includes one or more of:	• keeping the work area clean at all times which should be carried out to a regular daily schedule against allowed time, usually at the end of the day or of a particular process • keeping work area, including virtual work area, organised • noting any signs of wear, damage, leakage, safety risks or other issues that require immediate attention.
Standardising includes one or more of:	• activities that help maintain the order and the 5S standards • using procedures and checklists developed from a procedure.
Sustain includes one or more of:	• making sure that daily activities are completed every day regardless of circumstance • undertaking inspections, including: • informal inspections that should be carried often, at least weekly • formal inspections that should be carried out at least monthly.
Items in work area include one or more of:	• office supplies • materials • paperwork

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- furniture
- storage systems and cabinets
- lighting, wiring, plumbing and other services designed to support a working environment in the office
- manuals
- personal items (e.g. bags, phones, lunch boxes, clothing, photos and ornaments)
- safety and personal protective equipment
- any other item which happens to be in the work area.

Teams include one or more of:

- formal teams
- informal teams
- people working in the same area.

Target work area may be a physical and/or virtual workspace and includes one or more of:

- used by a person, a team or a cross-functional group
- common to part/s of a process or value stream (already defined)
- shared by people who undertake a defined procedure or set of procedures
- needed to support a particular function.

Appropriate places include areas designated for one or more of:

- recycling
- rubbish removal
- staff room/lunch room/kitchen
- office supplies, filing and other storage
- functions, such as printing/copying
- holding until status is confirmed.

Optimum assigned location includes:

- making changes to the layout of furniture, equipment and personnel in order to facilitate the smooth and continuous flow of work through process steps taking into account WHS considerations.

Non-conformance includes:

- incorrect or incomplete application of 5S procedures, including any daily tasks, scheduled inspections and continuous improvement procedures.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403040A Facilitate and improve implementation of 5S

Links

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Assessment Requirements for MSS403040 Facilitate and improve implementation of 5S

Modification History

Release 1. Supersedes and is equivalent to MSS403040A Facilitate and improve implementation of 5S

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 include the ability, in one (1) or more allocated areas, to:

- identify the scope of the services and/or functions supplied to and by the team or work area and the deliverables expected by customers, including the ultimate customer
- facilitate a systematic approach to implementing 5S
- lead and motivate others in achieving 5S outcomes and making improvements to the 5S systems
- set up systems for monitoring and improving 5S implementation
- manage non-conformances in implementation of 5S.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role independently, including:

- principles and purpose of 5S
- methods of identifying waste in the work area, such as:
  - waste walk
  - document tagging
  - tracking/log sheets
  - spaghetti diagrams
  - existing information technology and enterprise resource systems (e.g. SCADA, ERP and MRP)
- methods of identifying and evaluating options
- work health and safety (WHS) requirements relevant to team and work areas
- processes for identifying and addressing skill gaps.

Assessment Conditions

- 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:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the implementation of 5S procedures in a work area where 5S has not previously been undertaken, or, demonstration of improving 5S application in a work area that has already undergone prior 5S procedures
  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- Assessment should occur in operational workplace situations. 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS403054 Facilitate breakthrough improvements

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Foundation skills information added. Assessment requirements changed. Supersedes and is equivalent to MSS403041 Facilitate breakthrough improvements.

Application

This unit describes the skills and knowledge to facilitate implementation of discrete targeted improvement activities to achieve breakthrough improvements in selected processes, operations or products. The unit also covers ensuring that the improvements are sustained. The process of achieving breakthrough improvements is often called kaizen blitz in lean terminology. Typically, this approach is used for improvements in areas of waste identified through value stream mapping.

This unit applies to team leaders and others who are providing guidance and support to assist a team of employees to identify improvements that can be implemented to operations, processes or products in a brief intensive project.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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 improvement event	1.1	Engage team members in the improvement event
	1.2	Identify process or processes to be targeted in the improvement event

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	1.3	Assist team members to identify how their own roles contribute to value to the customer
	1.4	Assist team to identify the boundaries of the event, including imposed exclusions
	1.5	Identify key process indicators and other information required for improvement event
	1.6	Identify skill needs for personnel engaged in breakthrough improvement event and arrange for required training
	1.7	Establish communication processes with sponsor and stakeholders
2. Identify improvements	2.1	Assist team to review current processes, operations or products and identify options for radical improvements
	2.2	Facilitate team and personnel to evaluate the options and agree on improvements to be made
	2.3	Encourage and assist team and personnel to plan the activities and identify metrics to be monitored
	2.4	Facilitate allocation of resources and strategies to manage impact on routine work
3. Facilitate the event	3.1	Assist team to gather baseline data on the selected metrics
	3.2	Assist team to identify and address barriers to making the improvements
	3.3	Monitor team dynamics and facilitate team focus and cooperation
	3.4	Liaise with sponsor to communicate progress and maintain their support
4. Evaluate improvements	4.1	Assist team to gather and interpret data on the metrics
	4.2	Facilitate team activities to evaluate the outcomes of the event
	4.3	Identify causes for areas of poor performance from changes and identify changes to address them
	4.4	Report to sponsor and stakeholders on the outcomes of the event

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5. Embed improvements	5.1	Establish mechanisms to ensure new systems and practices are communicated to relevant personnel
	5.2	Motivate team to apply the new systems and practices and sustain improvements
	5.3	Ensure the new systems and practices are reflected in procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Oral communication to effectively guide and assist personnel.

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS403041 Facilitate breakthrough improvements.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS403054 Facilitate breakthrough improvements

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Foundation skills information added. Assessment requirements changed. Supersedes and is equivalent to MSS403041 Facilitate breakthrough improvements.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- facilitated at least 1 breakthrough improvement event, including:
  - leading and motivating at least 1 of the following types of teams in planning, implementing and sustaining improvements:
    - a permanent formally identified team
    - a sub-group of a team
    - a formally designated team
    - an informal group of employees
    - stakeholders or specially established group brought together for the breakthrough improvement event.
    -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- how organisation operations and processes contribute to the value stream
- types of waste (muda)
- imposed exclusions
- methods of identifying and evaluating options
- work health and safety (WHS) requirements relevant to facilitating breakthrough improvements.

Assessment Conditions

- Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

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MSS403085 Ensure process improvements are sustained

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge required to ensure that the gains which have been made by using improved methods, processes and/or equipment are sustained as the new baseline or standard for an area of work and so prevent regression to former practices, or digression to less efficient practices.

This unit applies to individuals working in a team or work area who have already implemented competitive systems and practices related improvements in their own work and who must work effectively with others implementing competitive systems and practices to ensure that performance improvement gains are sustained.

The unit applies to team leaders, senior operators, technicians or tradespeople who are required to mentor others and integrate the application of their technical skills with the implementation of competitive systems and practices in an organisation. Employees will be required to problem solve, show initiative, plan, organise and manage own output and development.

The unit applies to all areas of an organisation, including production, maintenance, logistics and office functions.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Examine previous improvements**	1.1	Identify impact of previous process improvements to systems, equipment, operations or products in work area
		1.2	Identify previous improvements that have not met objectives
2	**Ensure corrective actions are implemented**	2.1	Identify corrective actions that can be taken on process improvements that have not met objectives
		2.2	Liaise with relevant people associated with the anticipated corrective action
		2.3	Obtain any required approvals
		2.4	Arrange for the supply of resources
		2.5	Check impacts of corrective action on work health and safety (WHS), quality and environmental systems in work area and take action in accordance with procedures
		2.6	Check that self and others in team or work area have required skills for corrective actions
		2.7	Monitor implementation of corrective action
		2.8	Make required adjustments
3	**Verify systems support improvement**	3.1	Verify procedures reflect improvements
		3.2	Check that training and assessment activities in team or work area reflect improvements
		3.3	Liaise with relevant people to ensure their support of the new or modified system/s
4	**Audit the change**	4.1	Determine an audit period or cycle
		4.2	Agree measures and indicators for the improvement

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	4.3 Measure performance at agreed times using agreed measures
	4.4 Investigate causes of under-performance
	4.5 Take corrective action to improve performance
	4.6 Re-audit the improvement on an agreed basis

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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403002 Ensure process improvements are sustained.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS403085 Ensure process improvements are sustained

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified at least 1 previous improvement that has not met objectives and identified and implemented actions to correct this without adverse impact on other areas
- conducted at least 1 audit to measure the improvement from the change.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- muda and its causes
- processes and procedures for the organisation relevant to the work area
- sustaining approaches, including poka yoke, baka yoke
- measures of performance relevant to the work area and the improvement.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS403086 Improve cost factors in work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge required by an individual to evaluate the product or process outcomes of a team or work group in terms of their cost components and to be able to determine, in general terms, the cost impacts of alternative actions. This includes the efficient organisation of own work, and that of others in a work area or within a team, and the improvement of throughput and cycle times.

This applies to team members who will be required to problem solve, show initiative, plan, organise and manage own output and development. Decisions are made within the scope of the authority of the individual and other employees in the area or team and according to procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Analyse cost components of work area or**	1.1	Identify cost components in the product or process
		1.2	Identify costs factors under control of area or employees in the team

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
	team function	1.3 Identify causes of variability in costs
		1.4 Analyse impact of costs on production or process activities undertaken
2	**Improve cost-efficiency of processes and procedures**	2.1 Identify methods of improving productivity and reducing costs within area or team's responsibility
		2.2 Calculate cost benefit ratio of alternative methods of improving productivity and reducing costs
		2.3 Consult with all stakeholders regarding possible changes
		2.4 Recommend changes which will increase productivity and reduce cost and variability
		2.5 Implement recommended changes in consultation with stakeholders

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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403030 Improve cost factors in work practices.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS403086 Improve cost factors in work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified and analysed cost factors in work practices and made recommendations to improve costs on at least 1 occasion.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- cost components of products made
- costs concepts, including expense/capital, income and cost benefit ratios
- major cost contributors to product (including energy, materials and inputs, labour and distribution)
- difference between internally and externally controlled costs
- difference between overhead, capital, expense, labour and other consumables.
- causes of cost variances.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS403087 Mistake proof an operational process

Modification History

Release 1. Updated unit code. Changes to elements and performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to analyse a process that a team is responsible for and determine methods of mistake proofing it. This includes determining, implementing and sustaining improvement activities.

The person will typically be a technical expert, team leader or be in a role where they have sufficient technical understanding of processes in their own work and that of others to be able to mistake proof the production process in their area.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Analyse process**	1.1	Identify sources of variability and non-conformance in the process
		1.2	Identify critical control points in process
		1.3	Analyse causes of variability and non-conformance

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
2	**Develop preventative options**	2.1	Liaise with team members and other people to develop mistake proof options for performing operation
		2.2	Test and validate mistake proofing options
3	**Implement permanent fix**	3.1	Liaise with relevant people to have systems and procedures changed to implement solution
		3.2	Liaise with relevant people to implement the solution
		3.3	Liaise with relevant people to ensure self and others in the team or work area have appropriate skills
		3.4	Follow through to ensure implementation occurs
4	**Monitor implementation**	4.1	Critically observe the implementation
		4.2	Compare the results of the implementation against the expected outcomes
		4.3	Modify solution to improve outcomes
		4.4	Confirm procedures reflect change
		4.5	Confirm training and assessment reflects change
		4.6	Audit change at agreed period or cycle
		4.7	Address any observed deviation
5	**Seek improvements**	5.1	Observe and monitor changes
		5.2	Analyse process again to ensure improvements are sustained

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403051 Mistake proof an operational process.

Links

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Assessment Requirements for MSS403087 Mistake proof an operational process

Modification History

Release 1. Updated unit code. Changes to elements and performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- mistake proofed (applied baka yoke or poka yoke) to at least 1 operational process.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- baka yoke and poka yoke approaches
- factors causing variability in the process and methods of controlling it
- error causes and control options
- cost benefit analysis, feasibility, regulatory compliance and perceived value to the customer
- validation of baka yoke and poka yoke proposals.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS404054 Apply statistics to operational processes

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404052 Apply statistics to operational processes.

Application

This unit describes the skills and knowledge required to gather and analyse process data to support the control of processes and operations. It includes interpretation of sampling procedures, frequency distributions, random and non- random variations in data/control charts; use of control limits to determine whether monitored processes are in control; and communicating this information to others.

This unit applies to a person working in an organisation applying statistical process control on processes or operations. The statistical process control will usually be used to monitor the processes or operations and determine when action needs to be taken. The appropriate action will then be taken in accordance with standard procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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 process data	1.1	Read and interpret sampling scheme
	1.2	Obtain measurements in accordance with standard sampling procedures

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	1.3	Handle data in accordance with procedures
2. Interpret data	2.1	Plot data on control chart
	2.2	Identify random and non-random patterns of results
	2.3	Identify results outside the control limits
	2.4	Identify situations requiring action
	2.5	Take action in accordance with procedures
	2.6	Calculate cost of non-conformance
3. Calculate control limits	3.1	Consult stakeholders to determine appropriate limits
	3.2	Calculate and revise control limits
	3.3	Plot limits on control chart and complete all records in accordance with procedures
	3.4	Explain impact of limit to stakeholders

Foundation Skills

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS404052 Apply statistics to operational processes.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS404054 Apply statistics to operational processes

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404052 Apply statistics to operational processes.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- gathered, analysed and interpreted process data to monitor and control at least 2 operational processes.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- purpose of sampling and measurement
- sampling methods to be used
- methods of calculating mean and standard deviation and their purpose in statistical control
- concept of limits, including 1, 2, 3 and 6 sigma limits
- types of control charts and their applications to different types of process and product and for different purposes
- process causes of variation and typical cause types of non-random variation
- non-process causes of variation
- stable and unstable processes
- causes of stability and instability in the process
- calculation of control limits and process capability and the applications of different control limits
- standard distribution curve and confidence limits.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS404060 Facilitate the use of planning software systems in a work area or team

Modification History

Release 1. Supersedes and is equivalent to MSS404060A Facilitate the use of planning software systems in a work area or team

Application

This unit of competency covers the skills and knowledge required to facilitate the use of planning software in an organisation in an individual's work area or team. These systems are known by various generic names, such as Enterprise Resource Planning (ERP), Materials Resource Planning (MRPII, MRP III etc.) or by proprietary names.

This unit applies to an individual who will access the planning software system for their own work, but will also need to provide support and organise skill development programs for their team or work group members. The individual will typically be a technical expert, team leader or be in a role where they have sufficient technical understanding of processes in their own work and that of others to be able to facilitate the use of the planning software system. The planning software system will be used routinely in the work of the team or work group.

This unit primarily requires the application of skills associated with using communication technology and supporting team use of planning software. Problem solving, initiative and enterprise, and planning and organisational skills are required to ensure that planning software is used efficiently. This requires aspects of learning and self-management to ensure own performance and that of the team.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify scope of planning software**	1.1	Identify categories of information held by planning software.
		1.2	Identify information categories relevant to team and area processes.
		1.3	Identify range of information able to be provided to planning software by team or work group.
		1.4	Identify range of information able to be provided to team or work group by planning software.
2	**Communicate using the planning software system**	2.1	Send and receive information using planning software.
		2.2	Send and receive messages using planning software.
3	**Make decisions using planning software**	3.1	Interrogate the planning software system to find required current, historical or predicted information.
		3.2	Take actions appropriate to the information in accordance with procedures.
4	**Monitor the use of planning software**	4.1	Routinely monitor planning software information.
		4.2	Review performance and use of planning software with team.
5	**Support others to use planning software**	5.1	Regularly communicate with team or other work group members, both using planning software and face to face.
		5.2	Identify improvements required.
		5.3	Take action to implement improvements in accordance with procedures.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Planning software integrates a range of business information including one or	• sales/order taking • finance/accounting • logistics • maintenance • human resources

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more of:	• production.
Information and message categories include one or more of:	• orders • production/operations processes • scheduling (e.g. daily/weekly) • finance and accounting • human resources (e.g. rosters, reserves, training completed and scheduled) • quality requirements • customers • suppliers.
Stages where value stream actions occur include one or more of:	• sales outlet/representative • information gathering, data analysis and research • product design • raw material sourcing • intermediate processing • final assembler/collation/preparation • support services (e.g. accounting, finance and legal) • storage and delivery to customer • after market support.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS404060A Facilitate the use of planning software systems in a work area or team

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS404060 Facilitate the use of planning software systems in a work area or team

Modification History

Release 1. Supersedes and is equivalent to MSS404060A Facilitate the use of planning software systems in a work area or team

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 include the ability, to facilitate and/or provide support on three (3) or more occasions, to:

- identify team or work group area information requirements and relate to planning software categories
- lead and motivate others in using planning software
- ensure information sent to planning software is accurate and appropriate
- obtain regular and one-off information from planning software
- make decisions using planning software generated information.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job role sufficient to fulfil their job role independently, including:

- hierarchy of planning software system and operation
- information available from/through the planning software system
- query facilities and information analysis capabilities offered by planning software
- support/training/skill development mechanisms available for access by team members.

Assessment Conditions

- 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:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of the workplace
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include facilitating and/or support for teams or work groups using planning software systems in own workplace

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  - will typically include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- Assessment should occur in operational workplace situations.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

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MSS404084 Undertake process capability improvements

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge required to make process capability improvements, including analysing data from the process, developing improvements to eliminate variation due to assignable causes and then implementing actions.

This unit applies to a person who reviews a range of process capability data and information and makes (or arranges for) changes to be made to procedures, equipment or process and then recalculates the process capability and monitors resulting improvement actions. The person will typically be a technical expert, team leader or be in a role where they have sufficient technical understanding of processes in their own work and that of others to be able to suggest and justify process capability improvements.

Process capability may have been determined using either a six sigma or three sigma processes. This unit applies to the application of statistical methods and the determination of capability based on those methods.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Obtain required**	1.1	Identify process for study

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	data	1.2	Obtain or organise process to obtain required data and information
2	**Analyse information**	2.1	Read and interpret data and determine assignable causes
		2.2	Develop possible improvements to eliminate assignable causes
		2.3	Develop process improvement proposals
3	**Improve process capability**	3.1	Obtain required authorisations to implement improvements
		3.2	Liaise with relevant people to implement improvements
		3.3	Obtain or organise required data for improved process
		3.4	Recalculate process capability
		3.5	Implement revised data collection and processing and new capability information
		3.6	Monitor improvement actions and adjust

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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS404050 Undertake process capability improvements.

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Assessment Requirements for MSS404084 Undertake process capability improvements

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- planned and implemented at least 1 process capability improvement.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- data collection and manipulation techniques
- variability, normal distribution and three and six sigma limits
- type of variations:
  - random variation (no assignable cause)
  - non-random variation (which has an assignable cause).
- causes of non-random variation in the process
- approaches to reducing variability.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS404085 Undertake proactive maintenance analyses

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404081 Undertake proactive maintenance analyses.

Application

This unit describes the skills and knowledge required to undertake the most common forms of analyses associated with predictive/preventative/reliability centred maintenance strategies.

This unit applies to a technical expert (usually an engineer, technician or tradesperson) who is required to undertake analyses for predictive, preventative and/or reliability centred maintenance of plant/equipment as part of a competitive systems and practices strategy. This includes undertaking a failure effects analysis in accordance with organisation's procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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. Liaise with operator	1.1	Establish a relationship with the operator of equipment
	1.2	Check the operator has the required skills and resources to keep the equipment clean
	1.3	Check the operator can monitor the operation of the equipment

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	1.4	Communicate with operator about the overall equipment effectiveness (OEE) of equipment
	1.5	Involve operator, team leader and key personnel in identification of skill needs and means of skill acquisition to fill any identified gaps
2. Analyse history	2.1	Read maintenance records and analyse mean time between failures (MTBF)
	2.2	Read and analyse performance data of the equipment
	2.3	Identify causes of changes to historic trends and status
	2.4	Determine methods of ensuring causes of improvements and resolution of deterioration are locked in
3. Undertake failure effects analysis	3.1	Undertake analysis of failure effects and causes and record results
	3.2	Investigate methods of eliminating possibility of failure and minimising probability of failure
	3.3	Investigate methods of minimising the impact when failure cannot be eliminated
	3.4	Liaise with operator, team leader and key personnel regarding solutions
	3.5	Select and implement solutions
4. Undertake condition monitoring analysis	4.1	Obtain data for condition monitoring analysis
	4.2	Read and interpret condition monitoring data
	4.3	Predict required maintenance type and timing from condition monitoring data
	4.4	Liaise with operator, team leader and key personnel regarding implications of condition monitoring report
	4.5	Involve team members in development of changes to maintenance strategy to ensure awareness, learning and commitment

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Foundation Skills

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS404081 Undertake proactive maintenance analyses.

Links

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Assessment Requirements for MSS404085 Undertake proactive maintenance analyses

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404081 Undertake proactive maintenance analyses.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- undertaken proactive maintenance analyses of at least 2 items of equipment.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- cleaning requirements and operational principles of equipment in area of responsibility
- methods of assessing operator and maintenance skill gaps and filling them
- techniques for determining mean time between failures (MTBF)
- techniques for undertaking failure effects analysis
- principles of competitive systems and practices strategies being implemented and how to adapt them to maintenance
- root cause analysis
- techniques to analyse condition monitoring data.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS404086 Assist in implementing a proactive maintenance strategy

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404082 Assist in implementing a proactive maintenance strategy.

Application

This unit describes the skills and knowledge required by a maintenance person to assist in the implementation of a proactive maintenance strategy in an organisation. This unit includes the interaction between a maintenance worker and operators, as appropriate.

This unit applies to a maintenance person in an organisation that has adopted or is implementing total preventative and/or productive maintenance (TPM), reliability centred maintenance (RCM) or similar strategies. As part of this, the maintenance person is expected to assist in the implementation by determining appropriate maintenance related schedules and also by providing maintenance related assistance to non-maintenance personnel, such as assisting production personnel to fulfil their role in the TPM/RCM strategy.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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. Develop components of reliability strategy for a work or plant area	1.1	Read and interpret manufacturer's recommended inspection, servicing and related schedules for relevant plant

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	1.2	Communicate appropriate inspections, services and schedules to stakeholders
	1.3	Discuss any conflicts and seek resolution of conflicts
	1.4	Develop schedules in liaison with stakeholders
	1.5	Identify inspections and servicing which may be done by operations personnel in liaison with stakeholders
2. Assess current practice for maintenance implications	2.1	Identify the overall equipment effectiveness (OEE) and organisation targets for equipment
	2.2	Evaluate procedures for equipment reliability implications
	2.3	Discuss current practices with stakeholders to determine equipment reliability implications
	2.4	Recommend changes to improve equipment reliability in accordance with procedures
3. Assist in implementing the reliability strategy	3.1	Arrange for schedules to be incorporated into work plans
	3.2	Identify training needs in discussion with key personnel
	3.3	Assist personnel to develop required skills for inspections and servicing within scope of authority
	3.4	Collect data and information as required by own work plan
	3.5	Compare data and information with performance indicators
	3.6	Recommend improvements to reliability strategy in accordance with procedures

Foundation Skills

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

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Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS404082 Assist in implementing a proactive maintenance strategy.

Links

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Assessment Requirements for MSS404086 Assist in implementing a proactive maintenance strategy

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS404082 Assist in implementing a proactive maintenance strategy.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- assisted in implementing a proactive maintenance strategy in at least 1 organisation.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- requirements of the proactive maintenance strategy being implemented
- operating principles and procedures for equipment and plant subject to proactive maintenance strategy
- purpose and processes for data collection in proactive maintenance strategies
- procedures relevant to own job and organisation implementation of proactive maintenance
- methods of making and recommending improvements.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405013 Facilitate holistic culture improvement in an organisation

Modification History

Release 2. Minor updates and removal of superfluous information. Equivalent unit. Supersedes and is equivalent to MSS403013 Lead team culture improvement.

Application

This unit of competency covers the skills and knowledge required by a manager in an organisation that has embarked on competitive systems and practices and who seeks to change/improve the organisation culture to be consistent with that required to maximise the benefits from a competitive systems and practices strategy.

This unit primarily requires the application of skills associated with communication, teamwork, problem solving, and initiative and enterprise in order to assess and address culture development needs in the organisation. Planning and organising is required to ensure a systematic approach to the development of an organisation's culture that supports competitive systems and practices processes.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

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. Facilitate company-wide appreciation for the competitive	1.1	Communicate with all levels of the organisation the objectives and benefits of a competitive systems

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systems and practices strategy		and practices strategy
	1.2	Communicate to all levels of the organisation the techniques and methods that will be used in achieving the competitive systems and practices strategy
	1.3	Facilitate the development of a systems approach to how the organisation works
	1.4	Establish mechanisms to measure current understanding of, and support for, competitive systems and practices amongst employees and other stakeholders
	1.5	Set targets for culture improvement from measurement of current understanding and support for competitive systems and practices
	1.6	Demonstrate a constancy of purpose for the organisation in the push for the continual improvement in all activities.
	1.7	Break down any communication barriers between parts of the organisation that may inhibit the competitive systems and practices strategy
	1.8	Develop a work structure that allows for everyone to participate and be heard in the transformation of the organisation
2. Facilitate application of knowledge about variation and ways to improve the operational processes	2.1	Facilitate commitment to enterprise data collection procedures
	2.2	Facilitate the identification of variation in processes
	2.3	Facilitate review of processes with a view to reducing variation
	2.4	Encourage the approach of building quality in and eliminating the need for end of process inspection
3. Facilitate development of knowledge and skill acquisition	3.1	Involve employees in identification of skill needs and any skills gaps
	3.2	Develop strategies for training, skills acquisition and employee self- improvement

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	3.3	Set key performance indicators (KPIs) for training, skills acquisition and employee self-improvement
	3.4	Institute on and off-the-job training
	3.5	Institute a vigorous program of education and self-improvement for all employees
	3.6	Monitor KPIs and adjust training, skills acquisition and employee self- improvement strategies and delivery
4. Facilitate development of support within the organisation for competitive systems and practices	4.1	Ensure sufficient resources and adequate equipment is available to meet the requirements of the competitive systems and practices strategy
	4.2	Encourage acceptance of change
	4.3	Encourage employee commitment to and responsibility for the quality of their own work
	4.4	Monitor the level of employee understanding and support for competitive systems and practices
	4.5	Provide continuous feedback and communication of progress at all levels in implementing the strategy

Foundation Skills

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

Range of Conditions

Range of Conditions

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

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Competitive systems and practices include one or more of:	• 5S • agile operations • breakthrough improvement (kaizen blitz) • cause/effect diagrams • continuous improvement (kaizen) • current reality tree • just in time (JIT), Kanban and other pull-related operations control systems • lean operations • overall equipment effectiveness (OEE) • preventative and predictive maintenance approaches • problem solving • process mapping • run charts • standard procedures • statistical process control systems, including six sigma and three sigma • supply, value, and demand chain monitoring and analysis • takt time.
Systems approach includes consideration of all of:	• customer requirements • effect of changes • internal/external relationships through which products and services are produced • member of the public issues • supplier issues • value stream member requirements • other external individual, group or organisation.
Mechanisms to measure current understanding and support for competitive systems and practices include one or more of:	• employee surveys • individual consultations with selected employees and employee representatives • information from toolbox meetings and other employee consultations • monitoring of suggestion schemes • qualitative and/or quantitative methods.

Unit Mapping Information

Release 2. Equivalent to Release 1. Supersedes and is equivalent to MSS403013 Lead team culture improvement

Release 1. Minor updates and removal of superfluous information.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405013 Facilitate holistic culture improvement in an organisation

Modification History

Release 2. Minor updates and removal of superfluous information. Equivalent unit. Supersedes and is equivalent to MSS403013 Lead team culture improvement.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and has facilitated:

- culture improvement for an organisation, department or section
- appreciation for competitive systems and practices
- reduction in variation
- development of knowledge and skills
- increased support for competitive systems and practices.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- competitive systems and practices tools relevant to the organisation and its processes, their features and benefits
- the use of techniques for measuring support and culture
- organisation processes
- change management
- persuasion and influence techniques
- employee assistance available to facilitate coping with change.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405015 Manage relationships with non-customer external organisations

Modification History

Release 1. Code change. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405010 Manage relationships with non-customer external organisations.

Application

This unit describes the skills and knowledge required to identify and manage relationships with non-customer external organisations, including community groups, other businesses, training providers, research organisations and government departments. This includes managing a range of external organisations to the maximum benefit of the organisation and the organisation's customers while also identifying areas of mutual interest and benefit with the external organisations.

This unit applies to a manager or supervisor who is responsible for managing external relationships that may impact on the performance, community standing or regulatory compliance of the organisation.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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 mutual	1.1	Clarify the reason for contact with each external organisation

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interest	1.2	Gather information on extent of past contact and positive or negative outcomes for own and external organisation
	1.3	Identify expectations of initiating organisation
	1.4	Analyse the breadth, depth and complexity of external organisations' expectations
	1.5	Discuss expectations, ability to meet those expectations, and areas of mutual interest with internal and external representatives
2. Determine contribution of relationship	2.1	Identify value contributions from relationship
	2.2	Identify muda (waste) arising from relationship
	2.3	Classify muda (waste) into necessary or unnecessary
	2.4	Set key performance indicators (KPIs) for future relationship
3. Manage the relationship	3.1	Measure current performance of relationship against expectations and KPIs
	3.2	Develop systems to enhance mutual benefit and value contributions from relationship
	3.3	Develop systems to minimise and control necessary muda (waste) without causing harm
	3.4	Eliminate unnecessary muda (waste) without causing harm
	3.5	Monitor KPIs and determine future strategy for the relationship
	3.6	Continue to manage or terminate the relationship in a manner which enhances the organisation

Foundation Skills

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

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Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS405010 Manage relationships with non- customer external organisations.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405015 Manage relationships with non-customer external organisations

Modification History

Release 1. Code change. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405010 Manage relationships with non-customer external organisations.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- managed relationships for at least 1 non-customer external organisation.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- strategic requirements of own organisation
- strategic benefits to the organisation from liaisons with external organisations
- external organisations which may offer benefits
- benefits which can be offered to the external organisations
- customer benefits and features from products and processes of own organisation
- muda (waste) categories and elimination
- formal problem-solving procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405016 Manage workplace learning

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405012 Manage workplace learning.

Application

This unit describes the skills and knowledge required to manage learning and skill development for employees within an organisation implementing competitive systems and practices.

This unit applies to people with responsibility for managing the identification of skills required by employees to participate in implementing competitive systems and practices; and arranging any associated learning. The unit does not cover trainer and assessor skills.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

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. Determine current skill requirements for employees	1.1	Establish range and stage of implementation of competitive systems and practices techniques in the organisation
	1.2	Consult with stakeholders on skill requirements for effective implementation of competitive systems and practices techniques used in the organisation

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	1.3	Ensure records of skill mix currently required by employees are maintained in accordance with procedures
	1.4	Re-assess and monitor the skills required by employees as organisation requirements change
	1.5	Consult with stakeholders to predict new skill requirements arising from changes to products, processes, equipment or work organisation
2. Determine current skill mix of employees	2.1	Ensure current records of skill profile of individuals are maintained
	2.2	Consult with stakeholders and monitor the application of these skills in the workplace to ensure they remain current and valid
	2.3	Compare the actual and required skill mix for employees
3. Plan for skill development	3.1	Consult with employees and identify mismatch between skills possessed and used and skills required
	3.2	Identify new skills required due to anticipated changes
	3.3	Consult with stakeholders to determine the best way to refresh existing skills and develop new skills
	3.4	Develop individual skill development programs
	3.5	Ensure skill development arrangements are implemented in accordance with procedures
4. Forecast possible future skill needs	4.1	Examine strategic directions of organisation
	4.2	Discuss possible future directions with stakeholders
	4.3	Determine possible long-term future skill requirements in consultation with stakeholders
	4.4	Write plan to implement ongoing skill development to meet future skill requirements

Foundation Skills

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

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Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS405012 Manage workplace learning.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405016 Manage workplace learning

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405012 Manage workplace learning.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- managed learning and skill development for employees of at least 1 organisation implementing competitive systems and practices.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- features and benefits of common competitive operational practices in own workplace
- skills analysis methods and how to access skill analysis from experts
- skill development methods and how to access skill development programs from experts
- electronic and other systems to record and maintain training and skills records
- competitive systems and practices formal qualifications and units of competency
- processes and products of the organisation
- current processes and principles of operation to enable communication with others on the impact of competitive operational changes
- sources of data on the processes and products of the organisation and implications for workplace learning.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405030 Optimise cost of a product or service

Modification History

Release 1. Supersedes and is equivalent to MSS405030A Optimise cost of a product or service

Application

This unit of competency covers the skills and knowledge required to examine the costs of a product or service and determine methods of reducing costs. This unit applies to an individual a who is required to undertake a detailed study of a product or service's costs, including analysing it by its cost components to determining the best method of lowering the cost overall. This unit differs from *MSS405031 Undertake value analysis of a product or process costs in terms of customer requirements*, in that it looks at all costs, including overheads and takes a wider and more traditional approach to the cost of the product. Information and cost reduction strategies gained from the application of this unit may support other cost approaches in the enterprise, including value stream costing.

This unit primarily requires the application of skills associated with communication in gathering, analysing and applying information. Problem solving, initiative and enterprise, and planning and organising are required to calculate cost components and determine cost optimisation strategies. This unit also requires aspects of self-management and learning to ensure feedback and new learning is integrated into costing methods.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Analyse total cost components of a product or service**	1.1	Identify all cost components of product or service.
		1.2	Allocate cost components to major categories, such as overhead, depreciation, energy, consumables and labour.
		1.3	Distinguish between costs which directly deliver customer features/benefits and muda (waste).
2	**Optimise costs**	2.1	Analyse causes of costs which lead to customer features/benefit.
		2.2	Determine methods of increasing the customer benefit/cost ratio.
		2.3	Analyse causes of muda costs.
		2.4	Determine methods of reducing/eliminating muda costs.
		2.5	Analyse interactions between cost components.
		2.6	Check that one method of reducing costs does not cause an increase in another cost/reduction in consumer benefit.
		2.7	Check that cost reduction plans do not reduce required levels of regulatory compliance or work health and safety (WHS).
3	**Implement cost optimisation**	3.1	Develop cost optimisation plans.
		3.2	Negotiate with relevant people to agree on implementation plans.
		3.3	Take actions to implement the cost optimisation.
		3.4	Monitor the implementation of the cost optimisation.
		3.5	Make adjustments to the plan, as required.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Muda (waste) includes all of:

- excess production and early production
- delays
- movement and transport
- poor process design
- inventory
- inefficient performance of a process
- making defective items
- activities which do not yield any benefit to the organisation or any

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benefit to the organisations customers.

Cost includes all of:

- the monetary value of expenditures able to be directly identified for supplies, services, direct labour, materials, components, cost of inventory, faults and reworks, rejects/scrap, equipment and other items used in the production of the product
- allocations and estimates for indirect costs (e.g. indirect labour, rent, energy, water and cost of capital) where a direct monetary value cannot be identified.

Cost optimisation plans include all of:

- application scope (e.g. product/s, services, areas, employees and suppliers included in plan)
- target costs and target cost reductions
- implementation period
- method of monitoring
- method of communicating progress to stakeholders.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405030A Optimise cost of a product or service

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405030 Optimise cost of a product or service

Modification History

Release 1. Supersedes and is equivalent to MSS405030A Optimise cost of a product or service

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 include the ability to optimise costs for one (1) or more products or services and to:

- analyse all cost components
- optimise costs and minimise muda
- implement the cost optimisation.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to optimise costs, including knowledge of:

- cost component categories
- methods of allocating indirect costs and their implications
- expressing customer perceived benefit in cost or dollar value terms
- major controllable costs for the organisation, and how to control them
- types of muda and how to reduce it
- benefit cost/ratios, their determination and application.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real cost optimisation project for an operational workplace.

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- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405031 Undertake value analysis of product or process costs in terms of customer requirements

Modification History

Release 1. Supersedes and is equivalent to MSS405031A Undertake value analysis of product or process costs in terms of customer requirements

Application

This unit of competency covers the skills and knowledge required by an individual who is required to analyse products and processes to determine the value-adding factors, including design and processing costs that most impact on meeting customer requirements and which may also include competitor benchmarking. The unit also includes implementing identified changes that increase cost-efficiency. The unit may be applied individually or in a team environment.

In this unit an individual uses an analysis of the benefits/features which a customer perceives to be in a product or service as a basis for determining appropriate or unnecessary (muda) cost and so identifying and reducing muda (waste).

This unit primarily requires the application of skills associated with communication in gathering, analysing and applying information. Problem solving, initiative and enterprise, and planning and organising are required to determine cost-efficiencies. This unit also requires aspects of self-management and learning to ensure feedback and new learning is integrated into costing methods.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Analyse customer benefits to determine appropriate or muda (waste) costs**	1.1	Analyse product or service to determine features/benefits perceived by customer in product.
		1.2	Analyse cost components of product or service and determine those which deliver customer features/benefits and those which are either appropriate or muda.
		1.3	Determine any additional features that may be added to improve saleability.
		1.4	Analyse muda cost components and allocate to direct and indirect cost categories.
		1.5	Determine options for reducing direct and indirect muda costs.
		1.6	Select cost-related actions which maximise customer benefits and minimise costs.
		1.7	Where required, undertake competitor benchmarking to provide reference points.
2	**Analyse performance variance**	2.1	Identify muda processing or operational steps for product or service following completion of customer benefit analysis.
		2.2	Analyse all costs and determine methods of reducing costs and muda.
		2.3	Develop plan and recommendations for actions required to achieve cost improvement or added customer benefits to improve saleability.
		2.4	Submit plan and recommendations to stakeholders.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Muda includes all of:	• excess production and early production • delays • movement and transport • poor process design • inventory • inefficient performance of a process • making defective items • activities which do not yield any benefit to the organisation or any benefit to the organisations customers.
Cost includes all of:	• the monetary value of expenditures able to be directly identified for supplies, services, direct labour, components, cost of

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inventory, faults and reworks, rejects/scrap, equipment and other items used in the production of the product

- allocations and estimates for indirect costs (e.g. indirect labour, rent, power and water) where a direct monetary value cannot be identified.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405031A Undertake value analysis of product or process costs in terms of customer requirements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405031 Undertake value analysis of product or process costs in terms of customer requirements

Modification History

Release 1. Supersedes and is equivalent to MSS405031A Undertake value analysis of product or process costs in terms of customer requirements

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 include the ability to undertake value analysis on one (1) or more products or processes and to:

- distinguish between appropriate costs and muda
- distinguish between direct and indirect costs
- determine methods of reducing both appropriate costs and muda
- develop a plan to increase customer perceived benefits/ saleability and/or reduce costs and muda.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to undertake value analysis, including knowledge of:

- cost components, direct and indirect costs
- customer perceived benefits
- factors influencing saleability
- impact of customer features/benefits on sales, market share and firms profitability
- major costs which are controllable (and how to control them)
- types of muda
- methods of reducing muda.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

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- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real value analysis project in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

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MSS405040 Manage 5S system in an organisation

Modification History

Release 1. Supersedes and is equivalent to MSS405040A Manage 5S system in an organisation

Application

This unit of competency covers the skills and knowledge required for the overall management of the 5S system in an organisation.

This unit applies to an individual who is responsible for ensuring the smooth operation and continuous improvement of the 5S system in an organisation. This may be for an initial introduction of, or for the ongoing implementation and continuous improvement resulting from, 5S.

This unit requires the application of skills associated with problem solving, planning, communication and teamwork.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Organise an**	1.1 Ensure managers and other key stakeholders support and

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	appropriate environment for 5S		understand 5S.
		1.2	Arrange for team leaders to develop/maintain skills required for 5S.
		1.3	Ensure team leaders are developing/maintaining skills required in their team members.
		1.4	Ensure procedures and work practices reflect 5S needs and regulatory requirements.
		1.5	Practise 5S in own work.
		1.6	Eliminate roadblocks to 5S.
2	**Audit 5S implementation**	2.1	Undertake spot checks of compliance.
		2.2	Review workplace and records for indicators of compliance/non-compliance.
		2.3	Encourage all levels of the workforce to routinely suggest areas for improvement.
		2.4	Discuss 5S routinely with team leaders to seek ideas for implementation of improvement suggestions and encourage identification of non-conformance.
3	**Improve 5S**	3.1	Negotiate solutions to non-conformances.
		3.2	Implement agreed solutions.
		3.3	Work with team leaders to develop opportunities for improvements.
		3.4	Provide necessary resources for improvements.
		3.5	Ensure procedures and practices change to reflect improvements.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Procedures (written, verbal, visual, computer based, etc.) include one or any combination of:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

5S includes all of:

- sort
- set in order

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- shine
- standardise
- sustain.

Sort includes all of:

- separating necessary from unnecessary items (equipment and supplies)
- keeping only what is absolutely necessary for the work processes that comprise the job
- disposing of (or relocating) all other items.

Set in order includes all of:

- assigning required equipment and materials appropriate locations in the work area
- consideration of frequency of use, ergonomics and work health and safety (WHS)
- provision of facilities to maintain the locations.

Shine includes one or more of:

- keeping the work area clean at all times which should be carried out to a regular daily schedule against allowed time, usually at the end of the day or of a particular process
- keeping work area, including virtual work area, organised
- noting any signs of wear, damage, leakage, safety risks or other issues that require immediate attention.

Standardising includes one or more of:

- activities that help maintain the order and the 5S standards
- using procedures and checklists developed from a procedure.

Sustain includes one or more of:

- making sure that daily activities are completed every day regardless of circumstance
- informal inspections that should be carried often, at least weekly
- formal inspections that should be carried out at least monthly.

Items in work area may include one or more of:

- tools
- jigs/fixtures
- materials/components
- plant and equipment
- manuals
- personal items (e.g., lunch boxes and posters)
- safety equipment and personal protective equipment
- other items which happens to be in the work area.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405040A Manage 5S system in an organisation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405040 Manage 5S system in an organisation

Modification History

Release 1. Supersedes and is equivalent to MSS405040A Manage 5S system in an organisation

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 include the ability, across an organisation or department/section, to:

- encourage and monitor a systematic approach to implementing 5S
- analyse areas and records for evidence of 5S conformance/non-conformances
- manage non-conformances in implementation of 5S
- lead and motivate others in achieving 5S outcomes and making improvements to the 5S systems.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to manage 5S systems, including knowledge of:

- organisation operations and structure
- principles of efficient workplace organisation
- purposes and methodology of 5S
- operation procedures relevant to jobs in the organisation
- relevant regulatory requirements
- processes for identification of skill gaps
- methods of addressing skill gaps
- ways of encouraging team leaders and operators to find and suggest areas for improvement
- methods of making/recommending improvements
- methods of accessing required resources
- non-conformance, what they are, assessment of severity and action to be taken.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:

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  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project where initial introduction of, or ongoing implementation and continuous improvement resulting from 5S occur in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405041 Implement improvement systems in an organisation

Modification History

Release 1. Supersedes and is equivalent to MSS405041A Implement improvement systems in an organisation

Application

This unit of competency covers the skills and knowledge required to introduce, review/adjust and institutionalise continuous improvement and breakthrough improvement processes in an organisation.

This unit applies to an individual responsible for the introduction of, or ongoing implementation/improvement of improvement systems across an organisation. The systems will include a continuous improvement system sometimes also known as kaizen, and breakthrough improvement sometimes known as kaizen blitz.

The continuous improvement (kaizen) system consists of strategies for continuously monitoring for and implementation of incremental improvements to processes, operations and products. Breakthrough improvement ‘events’ (kaizen blitz) covers the identification of improvement opportunities that are best undertaken in a single exercise.

This unit primarily requires the application of skills associated with teamwork, problem solving, initiative and enterprise, and planning and organising skills in order to identify, implement and institutionalise kaizen activity. Communication skills are required to gather information and consult with team members and other stakeholders. This unit also requires aspects of self-management and learning to ensure feedback and new learning is integrated into continual improvement.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

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Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for improvement systems implementation/ adjustment**	1.1	Determine scope of improvement systems.
		1.2	Identify key performance indicators (KPIs) for inclusion in improvement systems.
		1.3	Prepare operating instructions and other required documentation for continuous and breakthrough improvement systems.
		1.4	Ensure compliance with health, safety and environment (HSE) and other regulatory requirements are addressed in improvement instructions.
		1.5	Identify and brief implementation team.
		1.6	Prioritise areas operation, or processes requiring early action.
		1.7	Prepare communication strategy for employees and other stakeholders.
		1.8	Make infrastructure and support arrangements for improvement systems.
		1.9	Obtain required approvals for commencement of improvement systems.
2	**Implement/adjust improvement systems**	2.1	Arrange for initial/update training in continuous improvement (kaizen) and related competitive systems and practices for employees.
		2.2	Facilitate the development of operating protocols for continuous improvement at the team level.
		2.3	Establish decision making mechanism for system level continuous improvement.
		2.4	Invite suggestions for breakthrough improvements.

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		2.5	Establish mechanism for prioritising breakthrough improvements.
		2.6	Establish breakthrough teams and implement priority breakthrough events.
		2.7	Clarify points of disagreement/uncertainty over improvement systems implementation through consultation and, where required, by reference to procedures or other relevant authority.
3	**Monitor implementation/ adjustment of improvement systems**	3.1	Consult stakeholders on processes and perceived success of early implementation of continuous and breakthrough improvement events.
		3.2	Analyse processes and operations to quantify variations in KPIs over early period of implementation of improvement systems.
		3.3	Identify and solve ongoing performance issues.
		3.4	Negotiate any differences between problems and proposed solutions.
		3.5	Develop plans and obtain agreements to implement further improvements.
		3.6	Implement improvements.
		3.7	Measure changes and calculate benefits.
		3.8	Complete all relevant documentation.
		3.9	Communicate achievements to stakeholders.
4	**Institutionalise continuous improvement**	4.1	Arrange for regular reviews of improvement systems.
		4.2	Integrate improvement system reports with other reporting processes, including visual management systems.
		4.3	Arrange for regular reporting of improvement system results to customers and other critical stakeholders.

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping • problem solving • run charts • standard procedures • current reality tree.
Scope of improvement systems includes one or more of:	• target divisions, operations, work processes, products and sites that stakeholders want included in a particular improvement system • levels of targeting for the continuous improvement system, including the system level focusing on the value stream and the overall achievement of customer defined features/benefits • process level focusing on individual processes, teams and team leaders.

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Relevance of KPIs includes one or more of:	• appropriateness (did they lead to/encourage desirable performance?) • currency (are they still encouraging desirable performance?) • unintended consequences (do they lead to outcomes which are not desirable – even if some performance is desirable?) • signal/noise (is the balance between desirable and undesirable outcomes strong and positive?).
Instructions for incremental or breakthrough improvement processes include one or more of:	• methods for employees to suggest incremental or breakthrough improvement • criteria for identifying a breakthrough improvement need • approval processes • monitoring and reporting processes.
Procedures (written, verbal, visual, computer based, etc.) include one or any combination of:	• work instructions • standard operating procedures (SOPs) • safe work method statements • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant.
Solving performance issues includes one or more of:	• generating improvement ideas (brainstorming/asking experts) • selecting most appropriate improvement ideas to proceed with • conducting experiments where required to test idea • making final selection of improvement ideas • determining most appropriate improvement strategy (i.e. incremental or breakthrough (kaizen blitz) improvement).

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405041A Implement improvement systems in an organisation

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405041 Implement improvement systems in an organisation

Modification History

Release 1. Supersedes and is equivalent to MSS405041A Implement improvement systems in an organisation

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 include the ability, across an organisation or department/section, to:

- interpret operations, processes and products in terms of customer features/benefits and then set appropriate key performance indicators (KPIs)
- prepare appropriate documentation for continuous and breakthrough improvement processes
- establish decision-making processes for considering system level continuous improvement suggestions
- encourage and lead others in implementing/adjusting continuous improvement system
- problem solve implementation issues with continuous improvement system
- lead and motivate others in planning, implementing and sustaining improvements.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to implement improvement systems, including knowledge of:

- continuous and breakthrough improvement (kaizen and kaizen blitz) philosophy and process
- competitive systems and practices in own organisation
- types of KPIs and their impacts on performance
- improvement processes, including implementation, monitoring and evaluation strategies.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

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- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project where the introduction of improvement systems occurs across an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.
  -

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405052 Design an experiment

Modification History

Release 2. Updated pre-requisite code

Release 1. Supersedes and is equivalent to MSS405052A Design an experiment

Application

This unit of competency covers the skills and knowledge required to design experiments. The design of experiments is generally undertaken as part of black-belt six sigma but may also be undertaken independently.

This unit applies to a technical expert who is required to design and implement experiments aimed at making breakthrough improvements in the process. They will work with other members of the process team in doing this.

This unit primarily requires the application of skills associated with problem solving, initiative and enterprise, and planning and organising skills in order to identify, implement and evaluate an experiment. Communication skills associated with gathering, interpreting and documenting information are required.

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

Pre-requisite Unit

MSS404054	Apply statistics to operational processes

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Choose an improvement project**	1.1	Review a process/value stream map.
		1.2	Identify areas in need of improvement.
		1.3	Select a process/value stream area for analysis and improvement.
		1.4	Determine the objective of the experiment in consultation with relevant stakeholders.
2	**Design the experiment**	2.1	Select appropriate factorial design.
		2.2	Estimate signal to noise ratio.
		2.3	Determine required number of runs and factorial fraction.
		2.4	Determine resolution.
		2.5	Design a sequential series of experiments.
		2.6	Calculate resource requirement for this design.
		2.7	Determine whether resource requirements are practical in consultation with relevant stakeholders.
		2.8	Modify experiment, if required, to match available resources.
		2.9	Determine/develop required metrics.
3	**Conduct the experiment**	3.1	Conduct first run of experiment.
		3.2	Replicate in random order for required number of runs.
		3.3	Block out known sources of variation.
		3.4	Conduct other experiments in series.
		3.5	Record data/have data recorded.

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4	**Analyse and confirm the experimental results**	4.1	Identify aliases/confounding of variables/results.
		4.2	Analyse data using statistics pack or similar.
		4.3	Interpret analysed data in line with objectives.
		4.4	Identify confidence level of analysed data.
		4.5	Design experiment to confirm correlations identified.
		4.6	Conduct confirming experiment.
		4.7	Analyse data from confirming experiment.
		4.8	Confirm results (or conduct further experiments).

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)

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- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving
- run charts
- standard procedures
- current reality tree.

Objective of the experiment includes one or more of:

- screen factors to find the critical few
- optimise a few critical factors
- solve process problems
- reduce waste
- increase reliability.

Factorial design includes one or more of:

- 2/3 level factorial
- Taguchi L8
- 2/4-1 half fraction
- Plackett-Burman 8-run
- full factorial.

Signal-to-noise ratio may be estimated by one or more of:

- previous experiment design experience
- previous process capability studies
- statistical process control data
- estimated from other sources.

Resolution includes one or more of:

- Resolution III design: A design where main factor effects are confounded with two factor and higher order interactions
- Resolution IV design: A design where main effects are confounded with three factor and higher order interactions and all two factor interactions are confounded with two factor interactions and higher order interactions
- Resolution V design: A design where main effects are confounded with four factor and higher order interactions and two factor interactions are confounded with three factor interactions and higher order interactions.

Sequential series of experiments

- a screening design (fractional factorial) to identify the significant factors
- a full factorial or response surface design to fully characterise or

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includes all of:	model the effects • confirmation runs to verify results.
Required metrics include one or more of:	• quantitative measures normally associated with the process • other quantitative measures relevant to the experiment • ranking systems for normally qualitative measures, such as defectives.
Statistics pack include one or more of:	• minitab • JMP • other specialist statistics packs • spreadsheets, such as Excel, particularly with specific add-ons, such as Sigma XL, Analyse It or other add-ons.

Unit Mapping Information

Release 2. Equivalent to Release 1

Release 1. Supersedes and is equivalent to MSS405052A Design an experiment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405052 Design an experiment

Modification History

Release 2. Updated pre-requisite code

Release 1. Supersedes and is equivalent to MSS405052A Design an experiment

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 include the ability to design one (1) or more experiments and to:

- choose an improvement project
- design and conduct the experiment
- analyse and confirm the results.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to design an experiment, including knowledge of:

- charting, such as Pareto charts, main effects plots, scatter plots, interaction plots, contour plots, response surface plots
- statistical principles and analysis, such as analysis of means (ANOM), prediction equations, analysis of variance (ANOVA)/one-way ANOVA, desirability function, hit a target, advanced graphical data analysis, multi-variate planning, variation trees and funnelling, hypothesis testing, central limit theorem, statistical analysis roadmap, analysis for means and t-test, correlation and regression
- factorial analysis principles and methods, such as multi-variate analysis, Taguchi S/N ratios, 2/3 level factorial, Taguchi L8, 2/4-1 half fraction, Plackett-Burman 8-run, full factorial
- acceptance criteria/confidence levels
- appropriate statistics packs, which to choose and how to use.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

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- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real experiment design project for an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405054 Determine and improve process capability

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405050 Determine and improve process capability.

Application

This unit describes the skills and knowledge required to determine the actual (as distinct from design) capability of a process and then to analyse that process to remove assignable causes and reduce random causes. This unit applies to an individual (who may be a production manager, plant/process engineer, technical specialist or similar) who is responsible for developing plans to stabilise and then improve process capability and, following agreement, the implementation of the plans to improve process capability. The organisation may use either a six sigma or three sigma process.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MSS404054 Apply statistics to operational processes

Competency Field

Competitive systems and practices

Unit Sector

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. Obtain data for process capability study	1.1	Identify the process requiring capability analysis, including procedures
	1.2	Identify customer specifications for product or service
	1.3	Obtain process capability data

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2. Analyse data	2.1	Read and interpret data to identify assignable causes of variation in liaison with relevant personnel
	2.2	Develop solutions to eliminate variation due to assignable causes in liaison with relevant personnel
	2.3	Analyse random variations for possible causes in liaison with relevant personnel
	2.4	Confirm causes of random variation
	2.5	Develop solutions to reduce random variations in liaison with relevant personnel
3. Improve process capability	3.1	Develop written plans to implement solutions
	3.2	Liaise with relevant personnel to implement solutions
	3.3	Gain necessary approvals to implement plans
	3.4	Monitor implementation and make adjustments
	3.5	Determine new or revised process capability
	3.6	Implement revised process capability regime

Foundation Skills

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS405050 Determine and improve process capability.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405054 Determine and improve process capability

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405050 Determine and improve process capability.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- determined and improved the capability of at least 1 process.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- statistical methods of processing and describing data
- data collection methods
- data processing techniques required to establish variability and normal distribution
- how to calculate three sigma or six sigma process capability
- random and non-random results and processes for recognition of assignable causes
- causes of different types of non-random results
- causes of random variation
- process to translate the data into variations in the process and determine methods of controlling them.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405063 Develop the application of enterprise control systems in an organisation

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405060 Develop the application of enterprise control systems in an organisation.

Application

This unit describes the skills and knowledge required to continuously modify and improve or develop new enterprise-wide information technology (IT) based control systems, such as Supervisory Control and Data Acquisition (SCADA), Enterprise Resource Planning (ERP), Materials Resource Planning (MRPII) and similar.

Typically, the development of such a system will be in liaison with an appropriate technical expert who may be an internal expert or an external consultant.

This unit applies to an individual responsible for the development and implementation of new systems or modifications to the current system. While the individual might generate the ideas for change themselves and undertake a significant part of the final implementation, they may also be working closely with an appropriate technical expert (such as the software system supplier) who may actually make the modifications.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1. Monitor information and control needs of organisation	1.1	Check the use of current information
	1.2	Check the operation of current control systems
	1.3	Communicate with key information users regarding new or changed information control needs, including information needs from and to value stream
	1.4	Identify short comings in information and control provision
	1.5	Act on information and control needs to meet organisational needs
2. Check current system against organisation needs	2.1	Check the routine use of the system
	2.2	Check system alarm or non-conformance notification and control operation
	2.3	Communicate with key stakeholders about current system use and application
	2.4	Determine effect of non-conformance on enterprise system
	2.5	Identify problems and issues and address in accordance with procedures
3. Determine developments needed in a new or significantly modified system	3.1	Identify needs requiring a new system or development of modifications to the current system
	3.2	Draft scope, specifications and outcomes required
	3.3	Liaise with key stakeholders and technical experts to refine scope, specifications and outcomes needed in new or modified system
	3.4	Agree final scope, specifications and outcomes
4. Develop system	4.1	Develop written project plan
	4.2	Facilitate ongoing consultation with stakeholders
	4.3	Manage development project
	4.4	Manage trialing of modified system
	4.5	Ensure modified system meets organisational requirements

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Foundation Skills

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS405060 Develop the application of enterprise control systems in an organisation.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405063 Develop the application of enterprise control systems in an organisation

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Assessment requirements changed. Supersedes and is equivalent to MSS405060 Develop the application of enterprise control systems in an organisation.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- developed the application of enterprise control system for an organisation for at least 1 of the following purposes:
  - development and implementation of new system
  - modifications to the current system.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- capability of resource planning, SCADA systems
- information and control needs of organisation and processes
- project management principles
- support, training, skill development mechanisms available for access by personnel.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405064 Determine and establish information collection requirements and processes

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Foundation skills information added. Assessment requirements changed. Supersedes and is equivalent to MSS405061 Determine and establish information collection requirements and processes.

Application

This unit describes the skills and knowledge required to determine what information is needed to support decision making in a competitive systems and practices environment and then to set about establishing required information collection systems. This would usually be done as part of a team and would require consultation with all key stakeholders.

This unit covers the determination of data needs and collection methods for an organisation or specific plant or process. This will typically be done in liaison with a wide range of people, each of whom will have their own specific information requirements. This will need to be balanced and interpreted into a workable set of data to be collected.

This unit is primarily focused on those decisions which are non-routine and so need specific collection of data, or for those decisions which are routine, the establishment of a routine data collection protocol to allow for the decisions to be made based on appropriate, reliable data.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Competitive systems and practices

Unit Sector

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1. Analyse decisions to be made	1.1	Identify personnel to be included in the analysis process
	1.2	Determine the consequences of the decisions in liaison with personnel
	1.3	Determine the variables which can be controlled
	1.4	Determine the variables which cannot be controlled
	1.5	Determine the consequences of a change in these variables in liaison with affected personnel
2. Define factors that cause variables to change	2.1	Identify factors which can be controlled
	2.2	Identify factors which are not able to be controlled
	2.3	Identify means of measuring these factors, or indicators for the values of these factors
	2.4	Compile a list of measurements or indicators required
	2.5	Communicate with team members and involve them in development of factors and changes to ensure awareness and facilitate learning
3. Develop data collection protocols	3.1	Determine methods of making measurements
	3.2	Determine methods of quantifying indicators
	3.3	Calculate the cost-benefit of data collection method
4. Develop systems to produce required information	4.1	Identify user of information and their needs and abilities
	4.2	Determine data processing needs to produce required information
	4.3	Determine information distribution channels
	4.4	Determine skill development need for recipients of information
	4.5	Implement systems to produce information
	4.6	Monitor implementation and adjust to produce required information

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Foundation Skills

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

Range of Conditions

Unit Mapping Information

Supersedes and is equivalent to MSS405061 Determine and establish information collection requirements and processes.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405064 Determine and establish information collection requirements and processes

Modification History

Release 1. Unit code changed. Application changed. Performance criteria changed. Range of conditions removed. Foundation skills information added. Assessment requirements changed. Supersedes and is equivalent to MSS405061 Determine and establish information collection requirements and processes.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- determined and established information collection requirements and processes for at least 1 specific plant or process.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- business needs of the organisation
- information needs of individuals within the organisation
- data available and potentially available to the organisation
- methods of collecting available and potential data
- relationship between data available and information required
- methods of converting data into useful information
- methods of developing indicators for factors resistant to measurement
- stakeholder consultation techniques.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume Implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405081 Develop a proactive maintenance strategy

Modification History

Release 1. Supersedes and is equivalent to MSS405081A Develop a proactive maintenance strategy

Application

This unit of competency covers the skills and knowledge required to develop and implement a proactive maintenance strategy for an organisation. The unit recognises that there are a number of predictive or proactive maintenance strategies, such as total productive maintenance (TPM) and reliability centred maintenance (RCM).

This unit applies to an individual responsible for developing a proactive maintenance strategy for an organisation. Typically the organisation will also be implementing other competitive systems and practices. The unit applies to the selection of appropriate strategies, initial development and implementation as well as application of the strategies to new areas and the improvement of operation in existing areas. This would typically be done in a team environment and in consultation with all key stakeholders.

This unit primarily requires the application of skills associated with communication in gathering, analysing and applying information and consulting with stakeholders. Teamwork, problem solving, initiative and enterprise, and planning and organising are required to develop and implement a predictive maintenance strategy. Strategies will incorporate the maintenance requirements of relevant technologies. This unit also requires aspects of self-management and learning to ensure feedback and new learning is integrated into maintenance strategies.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

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Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine appropriate analytical techniques**	1.1	Liaise with key stakeholders to determine objectives of maintenance strategy.
		1.2	Examine current maintenance situation to determine major areas requiring improvement.
		1.3	Compare possible strategies, techniques and tools against organisation needs.
		1.4	Select possible strategies, techniques and tools.
		1.5	Confirm selected strategies, techniques and tools with key stakeholders.
2	**Develop reliability strategies**	2.1	Select preferred maintenance strategy.
		2.2	Examine and adapt strategy to organisation needs and priorities.
		2.3	Examine and adapt techniques and tools required to implement strategy.
		2.4	Liaise with key stakeholders to develop an implementation plan.
		2.5	Identify key information and performance indicators required.
3	**Implement strategy**	3.1	Identify data collection required.
		3.2	Identify hardware and other resources required.
		3.3	Identify skill needs required in consultation with key stakeholders.
		3.4	Ensure all resources/training are available.

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		3.5	Implement strategy.
4	**Monitor implementation of strategy**	4.1	Compare information/performance indicators with desired levels.
		4.2	Liaise with key stakeholders regarding strategy issues.
		4.3	Identify areas requiring adjustment.
		4.4	Make required adjustments.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:	• lean operations • agile operations • preventative and predictive maintenance approaches • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time • process mapping

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- problem solving
- run charts
- standard procedures
- current reality tree.

OEE includes:

The combination of the main factors causing loss of productive capacity from equipment/plant and is:

- OEE = availability x performance x quality rate

where:

- availability takes into account losses due to breakdown, set-up and adjustments
- performance takes into account losses due to minor stoppages, reduced speed and idling
- quality rate takes into account losses due to rejects, reworks and start-up waste.

Mean time between failure (MTBF) includes:

One key measure of the effectiveness of a maintenance procedure, and is an indicator as to whether root causes are being found and resolved. If MTBF is reducing, then it is an indicator that the maintenance regime is failing.

There are many possible causes of any problem. Eliminating some will have no impact, others will ameliorate the problem. However, elimination of the root cause will eliminate the problem. There should only be one root cause for any problem and so the analysis should continue until this one cause is found. Elimination of the root cause permanently eliminates the problem.

Depending on the equipment, operations and procedures of the organisation, alternative statistical records of maintenance and maintenance-related events may be substituted for MTBF providing they relate strategies for improving OEE.

Failure mode effects analysis (FMEA) includes:

A systematic approach that identifies potential failure modes in a system, product, or operations/assembly operation caused by either design or operations/assembly process deficiencies. It also identifies critical or significant design or process characteristics that require special controls to prevent or detect failure modes. FMEA is a tool used to prevent problems from occurring.

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Some industry sectors have highly adapted forms of FMEA and may practice traditional FMEA in say their routine maintenance while using another technique, such as Hazard and Operability Studies (HAZOP) for design and modification.

HAZOP is a form of FMEA which has been practiced by the process industries for over 30 years and examines the implications of changes in process conditions to process stability.

Condition monitoring includes: The process of analysing the implications of condition monitoring data for proactive maintenance whether it be obtained from non-destructive testing (NDT) reports, visual assessment by experts, diagnostic reports obtained from SCADA or other enterprise or equipment software and product or process quality analyses. It does not require the actual undertaking of the NDT or condition monitoring assessment or test. If this is required appropriate units from other Training Packages will be required.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405081A Develop a proactive maintenance strategy

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405081 Develop a proactive maintenance strategy

Modification History

Release 1. Supersedes and is equivalent to MSS405081A Develop a proactive maintenance strategy

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 include the ability, for one (1) or more work areas or product families, to:

- consider a variety of proactive maintenance strategies for suitability to an organisation
- consult operators, maintenance, management and other stakeholders in decisions on proactive maintenance strategies
- implement selected strategies
- monitor performance to selected indicators and make improvements to selected proactive maintenance strategies.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to develop and implement a proactive maintenance strategy, including knowledge of:

- characteristics and strengths of different types of strategies, techniques and tools
- holistic costs of different strategies combining cost of maintenance with costs of lost production, sales, and so on, as relevant to the organisation
- business goals sufficient to match the strategy to the business needs
- strategic thinking and its application to proactive maintenance
- principles of process equipment and how to improve its reliability
- resources required and how to obtain them.

Assessment Conditions

- 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 is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

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- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project where development of a proactive maintenance strategy occurs in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSS405084 Manage people relationships

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to manage the human relationship aspects of implementing and operating competitive systems and practices.

This unit applies to managers, technical specialists or similar who will apply strong communication, teamwork, planning and problem solving skills to manage effective relationships.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Confirm organisation competitive systems and practices status**	1.1 Establish number and status of competitive systems and practices techniques being used within the organisation
		1.2 Identify key performance indicators (KPIs) for each technique
		1.3 Identify key sections and value stream members responsible for each KPI

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.4	Identify key personnel for communications
2	**Develop an open environment**	2.1	Establish and maintain regular dialogue between all levels and relevant sections of the organisation
		2.2	Encourage a flow of communications in both directions
		2.3	Develop and maintain a formal mechanism for the flow of issues, concerns and suggestions in both directions
		2.4	Develop and maintain regular and frequent communication with all key stakeholders
3	**Identify significant issues**	3.1	Identify current and potential issues in liaison with team members and stakeholders
		3.2	Assist team members and stakeholders to formulate issues
		3.3	Identify and define boundary and non-negotiable issues for all team members and stakeholders
		3.4	Negotiate with team members and stakeholders over actual and potential issues
4	**Proactively resolve issues**	4.1	Liaise with team members and stakeholders to develop agreed and win-win solutions
		4.2	Negotiate acceptable solutions in accordance with organisation practices and procedures
		4.3	Obtain any required official authorisations
		4.4	Consult with stakeholders to develop implementation plan
		4.5	Implement solution according to plan
5	**Monitor ongoing**	5.1	Determine KPIs for plan

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
situation	5.2 Check that implementation is proceeding to plan
	5.3 Check for unforeseen consequences
	5.4 Take action to resolve any arising 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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS405011 Manage people relationships.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405084 Manage people relationships

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- managed the human relationship aspects of implementing and operating competitive systems and practices for at least 1 work area.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- competitive systems and practices tools used in own workplace
- formal communication mechanisms
- work health and safety (WHS) and regulatory requirements, codes of practice, standards, risk management and registration requirements relevant to the task
- change implementation contacts and procedures for the organisation
- employee assistance mechanisms in the organisation
- current processes and principles of operation sufficient to enable communication with others on the impact of competitive operational changes
- sources of data on the process or plant and applications to information distribution
- methods of determining own skill needs and developing skills.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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PMAOMIR210 Control evacuation to muster point

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR210B Control evacuation to muster point

Application

This unit of competency covers the skills and knowledge required to coordinate and control evacuation to a designated muster point.

This unit of competency applies to operators who are required to assess an incident; prepare for and control evacuation, including people requiring assistance; conduct head counts; respond to first aid and other needs of evacuees; and maintain communications and safety throughout these activities.

Generally the person would be part of a team during the incident but may be required to act independently. At all times they would be liaising and cooperating with other members of the team.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Prepare to evacuate**	1.1 Recognise alarm or other signs of incident
		1.2 Determine nature and location of incident, wind

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			direction and other relevant information
		1.3	Assess incident situation and instigate relevant procedure
		1.4	Predict probable changes/escalation to incident
		1.5	Prepare the area and personnel for evacuation
		1.6	Facilitate incident roles and the operation of incident response stations according to procedures
		1.7	Coordinate incident response actions according to procedures
		1.8	Maintain communication channels with relevant personnel
2	**Control evacuation**	2.1	Identify hazards associated with evacuation
		2.2	Identify and communicate most appropriate path for evacuation to the desired muster point
		2.3	Implement relevant hazard control procedures
		2.4	Initiate evacuation when appropriate
		2.5	Ensure evacuation of mobility/sensory-impaired people
		2.6	Control incident evacuation according to procedures
		2.7	Undertake roll call of evacuated persons
		2.8	Communicate required details of evacuation to relevant personnel
3	**Complete evacuation**	3.1	Arrange and coordinate the first aid, welfare and other needs of evacuated persons
		3.2	Maintain control over evacuees
		3.3	Arrange for/provide assistance to the incident controller as required
		3.4	Maintain communication channels with relevant personnel

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3.5	Move evacuees to a new location, or dismiss and return to work
3.6	Debrief evacuees and seek possible improvements
3.7	Complete all required records and reporting
3.8	Make recommendations for improvements to be incorporated into procedures

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

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.

Tools and

Tools and equipment include one or more of the following:

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equipment

- hard hats
- armbands
- torches
- smoke hoods
- lifejackets
- incident communications equipment
- check lists and floor plans

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.
-

Hazards Hazards include one or more of the following:

- spread of fire
- threat to adjoining areas
- danger of explosion
- loss of communications
- falling or shifting debris
- obstruction of evacuation routes
- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs

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- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR210B Control evacuation to muster point

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR210 Control evacuation to muster point

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR210B Control evacuation to muster point

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 include the ability to:

- assess incident situation, related hazards and likely changes/escalation and apply procedures
- coordinate people and activities to effect evacuation according to procedures
- monitor and account for evacuees
- respond to needs of evacuees, including those who are injured, impaired and/or require other support
- communicate effectively with evacuees, incident controller and other personnel under stress
- complete forms and records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - emergency response plans
  - communication systems
- hazards that may arise in an incident and risk controls
- accounting procedures and analysis of reports from evacuation areas
- types of first aid and welfare responses available in an emergency.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Typically this evidence might be expected to be collected during an emergency drill.
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate tools, equipment and safety gear requiring demonstration of evacuation and mustering procedures
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR301 Undertake initial rescue

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR301B Undertake initial rescue

Application

This unit of competency covers the skills and knowledge required to effect an initial rescue arising from an incident on or off-shore.

This unit of competency applies to an experienced operator who, while performing their normal role, may witness or be alerted to an incident involving a co-worker. They are required draw on their experience in work health and safety (WHS) to make decisions in the critical minutes before other help arrives, and their actions may have a significant effect on the wellbeing of their co-worker.

The operator will be required to raise the alarm and alert others, obtain assistance, make decisions concerning the initial actions to be taken, take the actions in the right sequence, select and use rescue equipment and maintain own safety.

This competency applies to any person operating as a team member in a facility, including working under permits. Once the incident is declared the operator will typically respond to an incident team leader.

This unit of competency does not cover comprehensive vertical, technical or confined space rescue.

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

Pre-requisite Unit

MSMWHS216 Operate breathing apparatus

MSMWHS217 Gas test atmospheres

HLTAID003 Provide first aid

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Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Respond to the incident surroundings**	1.1	Check the surroundings for signs of any hazards
		1.2	Ascertain the condition of the person by visual and auditory means
		1.3	Check that the person is wearing any prescribed personal protective equipment (PPE) or harnesses
		1.4	Test the atmosphere for safe, breathable air
		1.5	Raise the alarm or alert other team members to the situation
2	**Determine the condition of the person**	2.1	Communicate with the person to check on their condition, if possible
		2.2	Check the ability of the person to move unassisted
		2.3	Gain access to the person, if safe to do so, using appropriate techniques
		2.4	Check the person's condition and vital signs and the extent of any injuries
		2.5	Determine whether the person can be moved and any obstacles that may need to be overcome
		2.6	Determine any first aid requirements
3	**Determine the appropriate rescue method**	3.1	Consider the condition of the person to be rescued
		3.2	Consider the time since the occurrence of the incident
		3.3	Consider the options for rescue and choose that most

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			suitable for a single person rescue
		3.4	Make the person as comfortable as possible
		3.5	Seek the assistance of rescue or emergency team members
4	**Use specialised rescue equipment**	4.1	Select rescue equipment compatible to the rescue method
		4.2	Use rescue equipment to effect a rescue in accordance with manufacturer specifications and organisational procedures
5	**Convey information to others**	5.1	Frequently and critically monitor the person during the rescue attempt
		5.2	Convey information concerning the affected person to arriving team members
		5.3	Convey information concerning the surrounding environment to team members
		5.4	Communicate with emergency team leader and advise progress of rescue
6	**Effect rescue within limits of safety and own capabilities**	6.1	Consider local circumstances, safety and own capabilities and effect rescue in the light of those circumstances
		6.2	Use appropriate methods to remove person from incident location
		6.3	Discontinue rescue efforts if it is evident that the rescue is beyond the limits of safety or own capabilities
		6.4	Monitor the condition of the person once removed from immediate danger or incident area
		6.5	Continue to communicate the need to obtain assistance in the event assistance has not arrived
		6.6	Assist person affected by the incident to acquire necessary medical or other attention

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		6.7	Hand person over to appropriate individual for further attention
7	**Complete incident reports**	7.1	Provide a verbal briefing to incident manager giving any details of injuries or ongoing unsafe conditions
		7.2	Complete incident report in accordance with organisational procedures
		7.3	Report any injuries or trauma effecting self and seek support
		7.4	Suggest any measures to control the risks in the incident area in accordance with procedures and duty of care
8	**Recommend improvements to the rescue process**	8.1	Identify possible problems in rescue equipment or process
		8.2	Identify problems needing action
		8.3	Identify possible causes
		8.4	Recommend solutions within area of responsibility
		8.5	Report problems outside area of responsibility to designated person

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.

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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.

Applicable legislation, regulations, standards and codes of practice include:

- health and safety legislation, codes of practice and guidance material
- environmental regulations and guidelines
- other relevant government legislation, regulations and codes
- Australian and other standards
- other relevant codes and standards
- licence and certification requirements

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 are 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
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Tools and equipment

Equipment and tools include one or more of the following:

- atmosphere testing equipment
- ladders
- lifting tackle
- slings and harnesses
- tripods
- stretchers

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- breathing apparatus
- first aid equipment
- other equipment that may be integral to the rescue operation

Hazards

Hazards include one or more of the following:

- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Problems in rescue equipment or process

Problems in rescue equipment or process include one or more of the following:

- unsafe working conditions
- faulty or defective equipment
- lack of appropriate safety equipment on hand
- inappropriate work procedures
- lack of attention

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR301B Undertake initial rescue

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR301 Undertake initial rescue

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR301B Undertake initial rescue

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 include the ability to:

- quickly and accurately assess incident situation, related hazards, condition of person, own capabilities and options for rescue
- raise an alarm/alert others and seek assistance from others according to procedures and as circumstances permit
- select and apply rescue methods that are safe and within own capabilities
- select and use rescue equipment
- monitor the person's condition and provide essential first aid until they can be handed over for necessary medical or other attention
- communicate with the person, team members and incident response personnel under stress
- complete written and verbal reports
- identify any ongoing safety issues and problems in the rescue process and take action to report or recommend solutions.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - personal protective clothing and equipment
  - communication systems
  - emergency response plans
- hazards that may arise in an incident and appropriate risk controls
- types and application of rescue equipment
- types and application of personal protective equipment (PPE) and special purpose safety devices relevant to job/work environment

rescue principles and techniques relevant to the plant/equipment/work environment.

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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
  - must include a simulated rescue, 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/
  - ‘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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR302 Respond to a helideck incident

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR302B Respond to a helideck incident

Application

This unit of competency covers the skills and knowledge required to provide essential rescue and containment services in a helideck incident.

This unit of competency applies to people operating in support of helicopter operations at a remote location or specialised helideck landing facility. In event of an incident the operator would be required to identify the course of action to be taken and undertake a front line role in rescue operations and damage control.

In a typical scenario, a person would facilitate the safe loading and unloading of personnel and cargo prior to or at the conclusion of a helicopter operation. With the occurrence of an emergency landing or aborted take-off the person would provide essential rescue and containment services.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members. During an incident response they would respond to the incident team leader. At all times they would be cooperating with other members of the incident response team.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Respond to the incident**	1.1	Raise the alarm
		1.2	Identify hazards and personal injury risks associated with the incident
		1.3	Take immediate action to initiate deluge system to provide for fire suppression, if appropriate
		1.4	Ensure blades and rotors have stopped moving before approaching the aircraft
		1.5	Look for signs of movement in the aircraft and actions to initiate escape from the fuselage
		1.6	Identify the safest path to and from the aircraft
2	**Evacuate persons from the aircraft**	2.1	Select equipment to facilitate evacuation and rescue
		2.2	Act to assist persons trying to exit the aircraft
		2.3	Direct or assist persons to a safe area in accordance with the emergency response plan
		2.4	Use rescue techniques and equipment to release entrapped persons
		2.5	Assist rescued persons to the safe area
3	**Provide assistance to evacuees**	3.1	Ensure assistance is sought for evacuees
		3.2	Assist to extinguish any burning clothing or equipment, such as damaged life jackets
		3.3	Assist to move evacuees as directed by the incident team leader or medical officer

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4	**Conclude incident activities**	4.1	Assist team members to contain any fires or spillage
		4.2	Search for and alert the incident team leader of any collateral damage.
		4.3	Assist with recovery of any debris that poses a threat to safety; moving components as little as possible in the process
		4.4	Seek personal medical attention or support as necessary
		4.5	Assist to secure the site to facilitate investigation of the circumstances surrounding the incident
5	**Complete incident debrief**	5.1	Record any damage inflicted on the aircraft in rescuing personnel
		5.2	Complete an incident report in accordance with organisational procedures
		5.3	Participate in debriefing sessions conducted by the organisation's or external authority representatives
		5.4	Identify any problems in equipment or process of responding to the incident

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

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration

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- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Tools and equipment

Tools and equipment include one or more of the following:

- rescue equipment
- specialised tools for cabin entry
- fixed fire-fighting systems
- deluge systems
- portable fire-extinguishers
- personal protective equipment (PPE)

Problems in equipment or process

Problems in equipment or process include one or more of the following:

- defective or inoperable equipment
- inappropriate or confused response to the incident
- injury to helideck operator

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR302B Respond to a helideck incident

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR302 Respond to a helideck incident

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR302B Respond to a helideck incident

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 include the ability to:

- quickly and accurately assess incident situation, related hazards, actions and priorities
- raise an alarm/alert others and seek assistance from others according to procedures and as circumstances permit
- select and use incident response and rescue equipment (where required)
- assess the immediate needs of persons requiring evacuation and provide assistance and/or seek assistance as required
- assist in making the incident area safe and securing the site to facilitate investigation
- complete written and verbal reports and workplace documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - helideck emergency procedures
  - personal protective equipment (PPE)
  - emergency response plans
- hazards that may arise in the job/work environment and appropriate risk controls
- types and application of PPE relevant to job/work environment
- type of aircraft and its construction
- aircraft hazards
- fire-fighting strategies and tactics for aircraft incidents
- muster points and safe areas for evacuees
- preserving site for investigation.

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.

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- 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
  - must include a simulated incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR317 Facilitate search and rescue operations

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR317B Facilitate search and rescue operations

Application

This unit of competency covers the skills and knowledge required to establish and implement a support plan to facilitate search and rescue operations.

This unit of competency applies to experienced operators in roles such as senior technician, team leader or manager who are required to establish local support for interaction between an isolated facility and appropriate agencies, initiate a muster, provide advice to assist the search and rescue, liaise with all relevant internal and external personnel, provide details of local weather, contact the search controller and activate incident response system.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift and emergency response team members, and the incident commander and control room operator, as appropriate.

This unit of competency applies to search and rescue operations arising from any incident and/or context, for example:

- lost plane/helicopter transporting crew
- lost supply vessel
- lost truck/vehicle
- individual or groups requiring rescue
- hazardous or non-hazardous goods
- land and sea rescue.

This unit of competency applies to site/facility personnel who will need to provide organisation input to the specialist search and rescue organisations. It does not cover the development of search and rescue plans, or the conduct/coordination of a search and rescue.

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

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Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Establish a search and rescue support plan related to the facility**	1.1	Identify possible search and rescue scenarios in liaison with relevant personnel
		1.2	Identify relevant local (or other) agencies
		1.3	Identify key contacts with relevant agencies
		1.4	Liaise with relevant agencies to develop/review site/agency interaction plans for a search and rescue
		1.5	Assess plans for operability and practicality
		1.6	Assess proposed plans with relevant agencies for compatibility with each other and own systems
		1.7	Negotiate and resolve conflicts
		1.8	Ensure site emergency plans are consistent with agreed agency interaction plans
2	**Activate search and rescue support plan**	2.1	Recognise that a search and rescue is required
		2.2	Obtain information required by the procedures and determine relevant agency/agencies to contact
		2.3	Contact relevant agency/agencies and activate search and rescue
		2.4	Provide all relevant and available information to the agency

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		2.5	Activate site incident response system relevant to the incident
3	**Liaise with search and rescue agency/agencies**	3.1	Monitor local situation and advise agency/agencies of any relevant changes
		3.2	Monitor search and rescue progress and provide relevant information to site incident response team
		3.3	Advise relevant personnel in own organisation of progress
		3.4	Negotiate issues with agency/agencies and own organisation
		3.5	Determine the need for additional/different resources and negotiate their timely acquisition
		3.6	Identify problems/potential problems with the search and rescue and develop solutions in liaison with the agency/agencies and own organisation
4	**Conclude search and rescue support**	4.1	Negotiate a conclusion to the search and rescue with the agency/agencies and own organisation
		4.2	Collect and preserve all relevant information
		4.3	Debrief with relevant people involved
		4.4	Complete reports as required
		4.5	Identify items for improvement and take action to have improvements implemented/built into support plans

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards

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- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Relevant agencies

Relevant agencies include one or more of the following:

- national maritime search and rescue
- state emergency services (SES)
- police

Information required by agencies includes, as available:

- last known position
- expected route and arrival and departure times
- local weather conditions
- relevant conditions at site, such as landing facilities

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR317B Facilitate search and rescue operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR317 Facilitate search and rescue operations

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR317B Facilitate search and rescue 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, and include the ability to:

- interpret the search and rescue plans for different agencies and determine interfaces with own organisation/site/facility
- keep required records before, during and after a search and rescue incident
- effectively communicate, negotiate and consult with internal and external parties.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - communication systems
  - emergency response plans
- external support agencies and their roles
- types and limitations of rescue vessels, aircraft or motor vehicles
- accessing and interpreting weather conditions
- response times
- available local resources.

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

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  - must include a simulated search and rescue
  - must include the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed

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- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR346 Assess and secure an incident site

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR346B Assess and secure an incident site

Application

This unit of competency covers the skills and knowledge required to ensure an incident site is rendered safe and kept secure.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to personnel performing an incident team leader or similar role who are required to make initial assessment of an incident site, secure and preserve the scene, isolate the area to prevent secondary incidents, record details about the incident area, take statements from witnesses and manage the scene until authorities arrive.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other incident team members and the incident coordinator/commander, as appropriate.

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The incident team leader typically responds to the incident coordinator/commander, who may be stationed in the incident control centre. In a typical scenario, following the occurrence of an incident, the person would take action to ensure the immediate incident site is safe and take steps to maintain facility safety, record details of the scene and preserve it from contamination. The person may also be required to manage the scene pending the arrival of appropriate authority or company representatives, as required by company procedures, legislation or regulations.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Secure and preserve the scene**	1.1	Undertake an initial assessment of the site to identify factors which will impact on safety and scene preservation
		1.2	Ensure that secondary incidents are prevented by isolating the site from associated or ancillary processes
		1.3	Coordinate arrangements to secure the incident/accident site to preserve the site and maintain the safety of personnel in line with procedures
		1.4	Restrict access to the site until the arrival of authorised company or external authority representatives
2	**Record details of the incident site**	2.1	Record details of the scene according to the organisation's policies and procedures

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		2.2	Note the status of any equipment in the incident area
		2.3	Communicate information to relevant personnel in line with procedures
3	**Gather information**	3.1	Record witness details and note any information given in accordance with procedures
		3.2	Take statements from witnesses and record details of persons believed to be near the site prior to or during the incident
		3.3	Develop an initial timeline of events leading up to the incident
4	**Ensure safety when responding to an incident**	4.1	Identify hazards
		4.2	Assess the risks arising from those hazards
		4.3	Implement measures to control those risks in line with procedures and duty of care
5	**Respond to problems**	5.1	Identify possible problems in equipment or process
		5.2	Determine which problems need action
		5.3	Determine possible fault causes
		5.4	Rectify problems using solutions within area of responsibility
		5.5	Follow through items initiated until final resolution has occurred
		5.6	Report problems outside area of responsibility to designated person

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment and tools

Equipment and tools include one or more of the following:

- note taking materials

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- standard forms
- sketching materials
- photographic equipment
- taping or electronic videoing equipment
- non-sparking or radio transmission equipment (where safety permits)

Problems

Problems in equipment or process include one or more of the following:

- rescue equipment and/or personnel contaminating the site
- loss of/difficulties in maintaining communications

Record details

Recording details and information requires accuracy and includes one or more of the following:

- capturing the exact words used vs summarising/paraphrasing
- noting conditions (like weather)
- taking photos
- diagrams/sketches
- noting the time of events and discussions
- own actions taken

Hazards

Hazards include one or more of the following:

- explosive atmospheres
- inherent site dangers from debris or damaged equipment
- weakened structures
- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials

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- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Identifying risks requires consideration of specific hazards, and:

- what level of harm can occur
- how harm can occur (various chains of events that could result in harm from the hazard)
- the likelihood that harm will occur

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR346B Assess and secure an incident site

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR346 Assess and secure an incident site

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR346B Assess and secure an incident site

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 include the ability to:

- secure the site to preserve and maintain safety of personnel and restricted access
- prioritise the safety and/or successful recovery of persons
- ensure that actions do not inhibit incident response effectiveness or further contribute to the incident
- complete reports and records
- accurately record witness statements and incident and site conditions
- communicate effectively with survivors, emergency personnel and others in stressful environments
- react appropriately under stress.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - incident, fire and accident response
  - incident, fire and accident reporting and investigation
  - communication systems
  - emergency response plans
  - reporting requirements
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - risks
  - appropriate risk controls
- methods of securing an incident site
- techniques for removing survivors and non-survivors from an incident site
- types of information which may assist in investigations
- techniques for recording information
- problem-solving techniques.

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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
  - must include securing an incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR407 Audit incident preparedness and established response systems

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR407B Audit incident preparedness and established response systems

Application

This unit of competency covers the skills and knowledge required to assess the extent to which a facility is prepared to respond to an incident.

This unit of competency applies to personnel in incident coordinator/commander, manager or technical specialist or similar roles who are required to examine existing incident response systems and practices, identify key areas where systems overlap or system breakdowns occur, ensure that the established systems are working in accordance to the incident response plan and legislative requirements, conduct and assess incident exercises, and provide input towards system continuous enhancement.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other incident response team members and the incident manager, as appropriate.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event. This unit would typically be applied to significant incidents, such as:

- fire and explosion
- loss of containment.

In a typical scenario the person would undertake an analysis of existing incident preparedness and response systems as part of a continuous improvement process or spot check. Part of the audit may involve the conducting of an unscheduled incident response drill, analysing the results and providing a thorough debrief of the persons involved. The person then may make recommendations for changes to the system. They may have an ongoing role for managing incident information and/or the incident information system.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Clearly identify benchmarks for audit**	1.1	Access, interpret and clarify the legislative, statutory and site requirements relating to incident preparedness and response systems
		1.2	Access and review relevant documentation of the incident response plan and established incident management systems
		1.3	Conduct consultations with stakeholders and specialists as necessary
2	**Plan, organise and undertake audit of the established incident response systems**	2.1	Identify or develop methods to audit the established incident management systems and processes as prescribed by the incident response plan and/or legislation in consultation with relevant personnel
		2.2	Identify and secure the resources required to conduct the audit
		2.3	Gather and sight relevant documents and all other evidence required in accordance with procedures
		2.4	Conduct the audit according to the identified/developed methods

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3	**Evaluate and report the results of the audit**	3.1	Evaluate evidence gathered for reliability, validity, authenticity, sufficiency, currency and consistency
		3.2	Promptly bring to the attention of relevant personnel any findings which have serious or immediate risks
		3.3	Disseminate records of the process and outcomes of the audit, including justifiable recommendations complying with procedures, to appropriate personnel in a timely manner
4	**Follow up results of the audit**	4.1	Discuss and confirm results with relevant personnel and provide feedback, including advice on corrective actions
		4.2	Follow up corrective actions relating to deficiencies until resolution has been achieved

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

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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.

Systems

Systems to be evaluated for relevance to and effectiveness in incident response include:

- hazard and risk management
- evacuation
- emergency operations structure
- communications
- information management
- documentation and reporting requirements
- resource management
- training
- audit and review system
- financial management

Documents and evidence

Documents and evidence will be selected as relevant from one or more of the following:

- electronic databases
- videos
- photographs
- written information/records/archives
- training and learning programs
- recorded interviews/interview transcripts

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions

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- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR407B Audit incident preparedness and established response systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR407 Audit incident preparedness and established response systems

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR407B Audit incident preparedness and established response 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, and include the ability to:

- communicate effectively with internal and external stakeholders
- audit and evaluate systems, practices and processes relevant to incident response against defined benchmarks
- develop and select methodologies for effective audit and evaluation that comply with any organisation or legislative requirements
- provide input towards system continuous enhancement
- complete reports and records
- identify risks and take appropriate action
- read and interpret information from a range of sources including procedures, reports, numerical information and charts.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - audit and review processes
- hazard identification and control
- risk management principles and techniques
- incident containment tactics
- identifying benchmarks for incident response systems
- types and application of audit methods

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- auditing principles.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR418 Coordinate incident response

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR418B Coordinate incident response

Application

This unit of competency covers the skills and knowledge required to coordinate the response to off-shore or on-shore incidents.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to personnel in incident coordinator/commander, incident control centre team member or similar roles who are required to minimise the escalation of the incident, allocate resources and assets, plan tactical responses, communicate with the incident response team, interact with external agencies required to assist with the emergency, and gather information about the incident.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other incident control centre team members, the incident manager and the incident support management group, as appropriate.

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The incident coordinator is responsible for interactions between corporate headquarters, on-site incident response teams and the person in charge of the facility. There may be more than one incident response team involved depending on the size and complexity of the incident.

The incident control centre and incident manager may be stationed on the facility or away from the facility or plant.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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 the situation and determine priorities**	1.1	Seek incident information from appropriate on-site personnel
		1.2	Monitor changes in the nature, extent and potential implications of the incident
		1.3	Develop incident response tactics based on analysis of the situation and consistent with the philosophies and strategies of the organisation
		1.4	Identify required resources in accordance with the tactics developed
		1.5	Continually review objectives in light of information updates, reports and feedback

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2	**Manage incident control centre**	2.1	Brief incident control centre personnel on the scenario and tactics, their roles and responsibilities, and of the way the centre will operate
		2.2	Allocate tasks to incident control centre personnel commensurate with their roles and level of competence
		2.3	Monitor performance of incident control centre personnel and review as the incident unfolds to determine ongoing requirements
3	**Liaise with internal management and support structures**	3.1	Regularly brief and provide communications to appropriate personnel in accordance with procedures
		3.2	Monitor and review resources to determine changing requirements in accordance with changing circumstances
		3.3	Ensure resources are available as required
		3.4	Liaise with relevant management and support structures to provide and/or obtain guidance and support
4	**Ensure communications systems are effective**	4.1	Establish communications with personnel at the incident scene
		4.2	Establish communications with other personnel on or off-site as required
		4.3	Ensure communications systems are managed to provide optimum capability
5	**Conclude and review incident activities**	5.1	Account for all personnel and other resources
		5.2	Conduct a debrief and complete company incident reports
		5.3	Evaluate and review tactics and procedures
		5.4	Evaluate and document effectiveness of the control function and its interaction with command organisations
		5.5	Communicate reports in accordance with company procedures

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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

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.

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

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Incident response actions must:

- be in accordance with and relevant to organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

Tools and equipment

Equipment and tools include one or more of the following:

- schematics, designs, detail drawings and maps/charts
- data systems, computers systems and electronic aids
- manuals, designs, operation procedures and instructions
- emergency vehicles or equipment
- vessels and aircraft
- rescue equipment
- first aid equipment

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR418B Coordinate incident response

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR418 Coordinate incident response

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR418B Coordinate incident response

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 include the ability to:

- communicate effectively with internal and external stakeholders in stressful situations
- develop and amend incident response tactics based on information available
- negotiate and communicate with internal support structures set up to assist with logistics planning, operations and external affairs
- identify resource needs and allocate and manage resources
- complete reports and records
- read and interpret information from a range of sources including procedures, reports, numerical information and charts.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
- hazard identification and control
- incident management techniques and tactics
- operational duration of essential equipment
- how to communicate effectively under stress.

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.

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- 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
  - must include coordinating the response to a simulated incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR424 Develop and maintain community relationships

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR424B Develop and maintain community relationships

Application

This unit of competency covers the skills and knowledge required to develop relationships with community stakeholders and facilitate:

- appreciation of the plant's contribution to the economy and the local community
- community contribution to the organisation's ecological and social objectives
- public safety awareness information
- public confidence in the competence of the organisation and its personnel.

This unit of competency applies to persons who are required to identify community stakeholders and information to be communicated, and to plan, implement and evaluate engagement and communication activities.

In a typical scenario the person is a member of the incident team and is designated with the task of ensuring the preparedness of the communities surrounding and/or affected by the facility to respond to an incident. For example, the organisation is preparing to shut down part of the plant for routine maintenance and as part of that process some of the gas will be flared off. This will create a spectacular plume over the plant but because the community is alerted to both timing and what to expect, community panic and concern is limited.

While independent action may sometimes be required, the person is expected to liaise, cooperate and consult with other members of the incident management team as necessary.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify information that needs to be disseminated to the community**	1.1	Access and examine incident response plans
		1.2	Conduct consultations with appropriate personnel as necessary
2	**Establish networks within the community**	2.1	Identify stakeholders within the community
		2.2	Initiate contact with key community stakeholders
		2.3	Establish and maintain rapport
		2.4	Enlist cooperation and support in organising and conducting public safety awareness activities
3	**Design and conduct public awareness activities**	3.1	Develop a plan in consultation with stakeholders and appropriate personnel
		3.2	Design activities to support the plan in consultation with stakeholders and appropriate personnel
		3.3	Clearly identify measures for assessing the outcome of activities
		3.4	Develop and distribute marketing materials and educational materials/resources appropriate to the context, issue and audience
		3.5	Identify and secure other resources required
		3.6	Develop and implement strategies for delivery of the project to ensure maximum effectiveness
		3.7	Make adjustments as required to meet the needs of specific groups

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4	**Evaluate activities**	4.1	Assess activity outcome against the planned goals/objectives and measures
		4.2	Complete reports detailing activities, results and recommendations according to procedures

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

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.

Public awareness

Public awareness activities include one or more of the following:

- distribution of educational materials/resources
- use of media to disseminate information
- public educational presentations
- conduct of, or attendance in, community meetings/forums

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- incident exercises

Information to support public awareness will be selected as relevant from:

- incident response plan and management systems in place to prevent an incident
- warning signals in the event of an incident
- procedures to be followed in the event of an incident relating to evacuation and welfare operations
- appropriate people to contact and contact details
- post-incident management systems
- social objectives and contributions
- ecological issues and controls

Incident

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event. This includes:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and

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specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Cooperation and support

Establishing cooperation and support from the surrounding community can alleviate potential problems, including one or more of the following:

- expressions of community concern about a lack of communication with the organisation
- an atmosphere of mistrust existing between the community and the organisation
- constant referrals of organisational activities to local, state/territory or Commonwealth authorities
- the volume of requests for information received from community groups or individuals
- protest meetings or rallies by concerned residents

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR424B Develop and maintain community relationships

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR424 Develop and maintain community relationships

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR424B Develop and maintain community relationships

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 include the ability to:

- identify and communicate and consult effectively with diverse stakeholders
- identify and plan for information to be communicated
- facilitate activities with diverse stakeholders
- write materials that convey desired messages in appropriate format and style for range of stakeholders
- identify measures and apply them to evaluation of activities.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation social and ecological objectives
- organisational procedures, including those covering:
  - incident, fire and accident
  - communication systems
  - emergency response plans
  - reporting and information storage
  - approvals and release of information
- community members and organisations who are likely to be stakeholders
- incident response plans and management systems
- promotional techniques and methods
- negotiation techniques
- group facilitation techniques
- group dynamics
- a range of presentation strategies and techniques.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed

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- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR430 Conduct and assess incident exercises

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR430B Conduct and assess incident exercises

Application

This unit of competency covers the skills and knowledge required to conduct and assess incident exercises.

This unit of competency applies to incident coordinators, managers, technical specialists or those in similar roles who are part of an incident response team. They may, but may not, have an ongoing role in managing the training and incident exercise system.

They will be required to plan and design exercises that approximate incident situations and responses and which meet identified objectives, manage and monitor scheduled and unscheduled exercises, provide feedback and debriefing, and evaluate the outcomes of incident exercises.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

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

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Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine objectives**	1.1	Identify the need for the incident exercise in consultation with stakeholders
		1.2	Determine the objectives of the exercise which meet the identified need
2	**Design exercise**	2.1	Select the exercise style, consistent with the objectives, in consultation with stakeholders
		2.2	Design the exercise to ensure that objectives are met and address health, safety and environment (HSE) issues
		2.3	Identify and secure the resources to support the exercise
		2.4	Document the exercise plan and prepare running sheet
		2.5	Distribute the exercise plan and running sheet stating the objectives to appropriate personnel
3	**Manage exercise**	3.1	Brief personnel involved in the exercise in respect of aims, objectives, expectations and activity outcomes
		3.2	Use the exercise plan to initiate and facilitate the conduct and direction of the exercise
		3.3	Conduct the exercise in a manner that addresses HSE issues
		3.4	Monitor the progress of the exercise and provide

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			feedback to personnel
4	**Evaluate outcomes**	4.1	Plan a post-exercise debrief based on the conduct and outcomes of the exercise
		4.2	Conduct a debrief with activity personnel
		4.3	Review outcomes of the activities against objectives
		4.4	Prepare and distribute a report of the activity to stakeholders

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

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.

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Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident.

Incident exercises

Incident exercises include one or more of the following:

- scenario analyses
- case studies
- role plays
- discussion exercises/desktop exercises
- functional centre exercises (specific task environments within the workplace)
- field exercises
- synthetic training
- high level architecture

Incident exercises incorporate one or more of the following:

- multimedia
- computer-based
- virtual reality
- distributed interactive software
- other appropriate formats or technology
-

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Exercise design

Exercise design includes:

- determination of activity management structure
- development of documentation
- design of activity
- plans for:
  - issuing notifications
  - briefings and debriefings

Activity personnel

Activity personnel refers to people who assist in the conduct of the incident exercise and include one or more of the following:

- activity director
- directing staff/coordinators/facilitators
- safety officers
- assessors/umpires
- public relations staff
- casualty simulators
- role player liaison officers
- administrative/welfare personnel to support learning and assessment tools

Running sheet

A running sheet is a summary document/check list including one or more of the following:

- who is involved in the exercise
- who does what to whom and when
- evaluation information
- safety instructions
- timetable/schedule of events
- activity inputs

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR430B Conduct and assess incident exercises

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR430 Conduct and assess incident exercises

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR430B Conduct and assess incident exercises

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 include the ability to:

- identify need and objectives for exercises
- plan, design and evaluate exercises that are based on, and are reasonable facsimiles of, industrial incidents and are relevant to the exercise objectives
- identify and address health, safety and environment (HSE) issues
- manage and monitor conduct of scheduled and unscheduled exercises
- evaluate exercise outcomes in terms of whether:
  - the exercise was carried out in accordance with expectations
  - there were unintended or inappropriate outcomes
  - incident response procedures failed/ were inappropriate
  - there were mismatches between equipment and incident requirements
  - feedback at the conclusion of the exercise was appropriate and adequate
  - an injury occurred during the conducting of the training exercise
  - improvements could/must be made
- provide briefings, debriefings and feedback.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
- incident management concepts and principles
- problem solving and decision making techniques

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- assessment and review techniques
- project management principles.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR444 Develop incident containment tactics

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR444B Develop incident containment tactics

Application

This unit of competency covers the skills and knowledge required to develop tactics to be used in the containment of incidents in on-shore and off-shore facilities.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to incident coordinators, managers, technical specialists or those in similar roles who are part of an incident response team. They may, but may not, have an ongoing role in managing the training and incident exercise system.

They will be required to assess the nature of the potential incident, identify objectives for incident containment, evaluate alternative tactics, analyse and interpret feedback and other information, recommend tactics appropriate to the context, and ensure that documentation and information is available to those who require it.

This unit of competency applies to an individual working alone or as part of an incident management team and working in liaison with other members of the incident management team and the incident manager, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify incident containment tactics**	1.1	Identify risk characteristics of the possible incident scenarios
		1.2	Identify specific objectives of incident containment
		1.3	Identify existing tactics
		1.4	Develop a range of alternative tactics
2	**Evaluate tactics**	2.1	Predict incident behaviour and growth under alternative strategy scenarios
		2.2	Consider issues relating to health, safety and environment (HSE)
		2.3	Identify and secure resource requirements for alternative tactics
		2.4	Identify the impact of tactics on a range of factors
		2.5	Identify and clearly document tactics
		2.6	Obtain, collate and record feedback on tactics from stakeholders and incident managers, and ensure this is reflected in the documentation according to procedures

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		2.7	Negotiate stakeholder needs and address
3	**Select tactics**	3.1	Document findings and feedback on the suitability of different tactics
		3.2	Recommend preferred tactics according to procedures
		3.3	Document tactics and build into strategies and training guidelines
4	**Adopt strategies**	4.1	Incorporate documentation on selected tactics into the appropriate incident management manuals
		4.2	Notify stakeholders of new tactics
		4.3	Incorporate selected tactics into incident training exercises

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

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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.

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

Alternative tactics

Alternative tactics are identified through one or both of the following:

- consultation with experts
- literature review

Evaluate tactics

Evaluation of tactics requires consideration of:

- specific incident conditions
- insurance policies and considerations
- economic impact and considerations
- availability, capabilities and operational limitations of external resources and agencies

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Preferred tactics

Preferred tactics meet one or more of the following:

- tactics achieve the desired outcomes
- tactic development is of greater value than expected
- adoption of tactics finds widespread approval
- incident containment is a success

Stakeholders

Stakeholders include any or all of the following:

- experts/specialists
- shareholders
- board of directors
- employees
- unions
- contractors
- suppliers
- insurance companies
- local community
- fire brigade
- police
- local emergency management organisations
- medical services
- relevant public authority

Hazards

Hazards include one or more of the following:

- heat, smoke, dust, darkness or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials

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- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Identifying risks requires consideration of specific hazards, and:

- what level of harm can occur
- how harm can occur (various chains of events that could result in harm from the hazard)
- the likelihood that harm will occur

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR444B Develop incident containment tactics

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR444 Develop incident containment tactics

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR444B Develop incident containment tactics

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 include the ability to:

- collect and analyse information to evaluate and recommend containment tactics appropriate to specific context
- identify and control hazards and risks
- communicate effectively with team members, management and other stakeholders
- write clear and unambiguous procedures and training documents to support tactics.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
- types of incidents that can arise in the work environment
- related risks and potential impact on environment, local community and economy of the organisation
- types of incident response and containment equipment and their application
- rescue techniques
- incident prediction
- intervention and control techniques for heating, fires and explosions
- incident resources and how to access them
- incident response and disaster planning processes and techniques
- hazard identification and control
- risk management principles and techniques
- structure, roles, capabilities and operational limitations of external resources and agencies

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- insurance policies and considerations
- economic impact and considerations.

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
  - must include development of tactics associated with a simulated incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:

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  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR449 Monitor legal compliance obligations during incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR449B Monitor legal compliance obligations during incidents

Application

This unit of competency covers the skills and knowledge required to oversee the operations of an incident management or crisis management team to ensure compliance with legislation and/or regulations.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to enterprise legal officers, environmental officers, safety officers or those in similar roles who are required to advise the management team on potential and actual breaches of legislation in the development of incident response plans, implement and evaluate incident response activities, submit organisational reports and prepare for legal proceedings on compliance issues.

This unit of competency applies to an individual working alone or as part of an incident management team and working in liaison with other members of the incident management team and the incident manager, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Conduct routine review of incident response plans**	1.1	Identify legislation, regulation and licencing relevant to possible incident scenarios
		1.2	Determine possible compliance issues with planned responses
		1.3	Negotiate alternative response plans which do not raise compliance issues
		1.4	Ensure plans, equipment and training are modified to reflect changed response plans
2	**Oversee the operations of the incident management team during the incident**	2.1	Ensure that the incident team is aware of legislation that needs to be complied with during the incident
		2.2	Obtain information concerning legal ramifications as required in accordance with organisation's policies
		2.3	Ensure accurate recording of all relevant details of all agreed actions
		2.4	Assess actions taken and proposed against relevant legislation to determine compliance and possible impacts on the company

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3	**Advise appropriate action to facilitate compliance during the incident**	3.1	Undertake consultations with regulatory authorities to facilitate minimal impact resolutions
		3.2	Advise management of options that are available to remain compliant
		3.3	Provide advice on actions to achieve compliance
4	**Monitor actions taken to achieve compliance during the incident**	4.1	Monitor company actions to resolve incidents and achieve compliance or remain compliant
		4.2	Document actions taken by the organisation to remain compliant
		4.3	Prepare reports for management regarding outcomes from the incident and any material breaches of legislation that have occurred
		4.4	Prepare for possible legal proceedings within required timeframe
5	**Seek improvements to incident responses post incident**	5.1	Identify possible areas for improvement
		5.2	Develop improved responses in liaison with relevant people
		5.3	Ensure plans, equipment and training are modified to reflect improved response plans

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

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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

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.

Duty of care responsibilities under general work health and safety (WHS) Acts and regulations, and state/territory and national standards applying to hazardous substances, dangerous goods and major hazards must be met.

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations

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- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident.

Legal compliance

Legal compliance during an incident involves monitoring all of:

- liquid leaving site (e.g. fire water, product and materials)
- smoke and vapour leaving site (e.g. from loss of containment (LOC) and fire)
- gas leaving site (e.g. from LOC)
- noise leaving site (e.g. from incident or incident response and alarms)

Identifying areas for improvement

Identifying areas for improvement includes addressing one or more of the following:

- difficulties tracking and identifying relevant legislation or amendments
- managing evidence for later investigations or enquiries
- interpersonal conflicts
- conflicts of interest
- failed compliance measures
- failure to comply with timeframes dictated by legislation or regulation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR449B Monitor legal compliance obligations during incidents

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR449 Monitor legal compliance obligations during incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR449B Monitor legal compliance obligations during incidents

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 include the ability to:

- identify potential compliance issues in incident response plans and compliance breaches in activities
- communicate effectively with team members, management and other stakeholders about compliance requirements, issues and solutions
- identify and provide advice on options for resolution of compliance issues and breaches
- document solutions and improvements to be implemented in training and procedures
- complete workplace documentation, write reports and prepare documentation for legal proceedings.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework and specific compliance requirements that apply to the organisation
- allowable defences for apparent compliance breaches
- types of incidents that can arise in the work environment, typical responses and potential compliance issues
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - release of information to external bodies
- constraints to negotiations that arise from organisation policies, procedures and corporate structures.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Element 1 is best assessed using a report and/or folio of evidence drawn from a single project which provides sufficient evidence of the requirements of all the performance criteria.
- The balance of the unit needs to be assessed off the job, and will occur as part of the response to a simulated incident.
- 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.
- 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:
  - demonstration of skills
  - industry-based case studies/scenarios
  - ‘what ifs’.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Knowledge evidence may be collected concurrently with performance evidence interviews (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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR512 Establish incident response preparedness and response systems

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR512B Establish incident response preparedness and response systems

Application

This unit of competency covers the skills and knowledge required to develop and establish incident response preparedness and response systems.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to incident management team members who are required to gather strategic operational and risk information, seek input from stakeholders and specialist services, as required, and translate that into a framework of management and operational systems which enable organisation personnel to effectively prepare for and respond to an incident.

This unit of competency applies to an individual working alone or as part of an incident management team and working in liaison with other members of the incident management team and the incident manager, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Clarify the requirements for incident preparedness and response systems**	1.1	Access, interpret and clarify the legislative and statutory requirements and standards related to incident preparedness and response systems
		1.2	Access, interpret and clarify the site requirements relating to systematic analysis of hazards, technical and operational information
		1.3	Consult and collaborate with relevant stakeholders, specialists and emergency services, as necessary and in accordance with legislative requirements
2	**Design incident response plans and systems**	2.1	Develop an organisational structure for the management of incident preparedness and response from an analysis of relevant technical and operational information
		2.2	Establish incident response procedures for management of decision-making processes and decision monitoring systems
		2.3	Develop incident response procedures for the containment of various types of incidents from an analysis of relevant technical and operational information
		2.4	Identify and develop required management and operational systems to support incident preparedness and

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			response in compliance with legislative and site requirements
		2.5	Build processes for evaluation into the plan and system and comply with legislative requirements and/or special site needs
		2.6	Ensure all aspects of the plan are consistent with commitments to health, safety and environment (HSE)
		2.7	Review the plan and systems in conjunction with relevant stakeholders and specialists
3	**Manage the implementation of the incident preparedness plan and response systems**	3.1	Document and disseminate plans and systems to the appropriate personnel
		3.2	Identify required services, personnel, equipment and resources for various types of incidents
		3.3	Ensure arrangements are made to ensure required services, personnel, equipment and resources are ready for immediate mobilisation/deployment
4	**Ensure periodic and timely evaluation of the incident preparedness plans and response systems**	4.1	Encourage, receive and review suggestions and recommendations for changes to incident preparedness plans and response systems and, where appropriate, assist with implementation
		4.2	Initiate and conduct evaluations as prescribed by the plan and in accordance with commitment to HSE and legislative requirements

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.

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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

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.

Duty of care responsibilities under general work health and safety (WHS) Acts and regulations and state/territory and national standards applying to hazardous substances, dangerous goods and major hazards must be met.

Management and operational systems

Management and operational systems to support incident preparedness and response include one or more of the following:

- evacuation
- emergency operations structure
- communications
- information management
- documentation and reporting requirements
- resource management
- training
- audit and review system
- financial management
- post incident actions

Procedures

All operations must be performed in accordance with relevant procedures.

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Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

Specialist services

Specialist services appropriate to the management and operational systems must be consulted. Specialist services include one or more of the following:

- fire brigade
- ambulance
- medical services
- local emergency management organisations
- media

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- security services
- solicitors
- engineers
- scientists

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR512B Establish incident response preparedness and response systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR512 Establish incident response preparedness and response systems

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR512B Establish incident response preparedness and response 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, and include the ability to:

- collect and analyse information to identify organisation and legislative requirements for incident response and related systems
- communicate and consult with internal and external stakeholders and relevant specialist services
- facilitate and manage the development, introduction and operation of incident response and related systems
- facilitate evaluation of the systems (and make recommendations for improvements/implement improvements)
- write strategies, tactics and procedures
- develop containment strategies.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework and specific compliance requirements that apply to the organisation
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - release of information to external bodies
- types of incidents that can arise in the work environment and related risks, responses and equipment
- the role of stakeholders and specialists
- incident response and disaster planning processes and techniques
- incident resources and how to access them

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- hazard identification and control methods and procedures
- risk management principles and techniques
- structure, roles, capabilities and operational limitations of external resources and agencies
- rescue techniques
- intervention and control techniques for heating, fires and explosions
- insurance policies and considerations
- economic impact and considerations.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Performance evidence must include the development of containment strategies for at least two (2) different types of incident, the collection of which is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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- appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
- appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions

- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed

being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR523 Manage corporate media requirements in a crisis

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR523B Manage corporate media requirements in a crisis

Application

This unit of competency covers the skills and knowledge required to manage the media and the provision of information during a major incident.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to incident management team members who are required to plan for and control media access to site areas, people and information, be a key point of contact and coordination between the organisation and media, carry out media briefings and represent the organisation in a professional manner with the media.

This unit of competency applies to an individual working alone or as part of an incident management team and working in liaison with other members of the incident management team and the incident manager, as appropriate.

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

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Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

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 scene and organisation requirements**	1.1	Clearly define restricted and/or special access areas to media personnel to safeguard the operation and prevent contamination of evidence
		1.2	Control media access to personnel/volunteers/victims/casualties
		1.3	Assess operational responsibilities and provision of information to media
2	**Develop media strategy**	2.1	Use media plan to form the media strategy
		2.2	Allocate media briefing area with required resources, where possible
		2.3	Gain approval for information releases, where appropriate
		2.4	Make arrangements to meet media requirements according to incident characteristics and current developments
		2.5	Gain media cooperation in order to coordinate information flow and to provide information to the public on matters of safety and public interest
3	**Brief media**	3.1	Select and brief organisational media representative according to availability, knowledge of incident, media

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			presence and role played in the incident
		3.2	Change media strategy at any time to suit operational demands and level of incident
		3.3	Schedule information briefing sessions and tours at appropriate times in line with operational responsibilities and media requirements
		3.4	Provide media personnel and VIP with personal protective equipment (PPE), where appropriate
4	**Provide information to media**	4.1	Follow organisational protocols when liaising with the media
		4.2	Provide organisational media representatives with current developments of incident, where appropriate
		4.3	Schedule interview and photo opportunities to provide information, where appropriate
		4.4	Consult with other organisations at the incident to ensure a consistent presentation of information to the media
		4.5	Monitor social media response to the crisis
		4.6	Adapt media management in response to social media
		4.7	Maintain accurate records of media enquiries and interviews
		4.8	Maintain a two-way communication process between organisation and media
5	**Promote the organisation via the media**	5.1	Promote work and achievements of organisation, volunteer and other organisation personnel at incident throughout the incident to assist in maintaining morale and public profile
		5.2	Ensure own demeanour and presentation reflects the professional standards of the organisation and support for victims and others affected by the incident
6	**Control hazards**	6.1	Identify hazards in work environment

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	associated with media coverage	6.2	Assess the risks arising from those hazards
		6.3	Implement measures to control those risks in line with procedures and duty of care
7	**Respond to problems**	7.1	Identify possible problems in equipment or process
		7.2	Determine problems needing action
		7.3	Determine possible fault causes
		7.4	Rectify problem using appropriate solution within area of responsibility
		7.5	Follow through items initiated until final resolution has occurred
		7.6	Report problems outside area of responsibility to designated person

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

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Media strategy

Media strategy must address:

- traditional media (e.g. newspapers, magazines, TV, and radio at local and national levels)
- social and digital media (e.g. online news sites, blogs, Twitter, Facebook, LinkedIn, Instagram and Google+)
- news personnel (e.g. reporters, photographers and TV crews)
- employees, contractors and others with access to the incident site

Briefings

Briefings cover key information and developments about the incident, including one or more of the following:

- key contact details (e.g. emergency hotline numbers)
- potential and actual road closure details
- factors behind facility closures
- issued warnings
- danger zones
- evacuation details

Problems

Problems include one or more of the following:

- media entering or encroaching on hazardous areas
- media organisations using unauthorised contacts with emergency personnel
- lack of cooperation by the media with the company
- premature release of details concerning evidence or about incident victims
- failures to adhere to company policies and/or guidelines for media communication
- incorrect or misleading information
- irresponsible use of social media

Hazards

Hazards include one or more of the following:

- heat, smoke, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration

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- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR523B Manage corporate media requirements in a crisis

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR523 Manage corporate media requirements in a crisis

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR523B Manage corporate media requirements in a crisis

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 include the ability to:

- develop, implement and amend media strategy appropriate to incident conditions and organisation protocols
- provide briefings to organisation media representatives, media personnel and other agencies who are at the incident site
- coordinate and arrange on-site access, interviews and provision of personal protective equipment (PPE), where required
- communicate effectively and professionally with media on behalf of the organisation
- maintain records and documentation
- identify and control hazards and risks
- identify problems and take appropriate action.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework and specific compliance requirements that apply to the organisation
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - release of information to external bodies
- techniques and protocols for dealing with the media
- strategies for managing information flow to different types of media (traditional/digital)
- sources of key operational information about an incident.

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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
  - must include carrying out simulated media briefings for a simulated incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR575 Coordinate welfare support activities in response to an incident

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR575B Coordinate welfare support activities in response to an incident

Application

This unit of competency covers the skills and knowledge required to oversee and coordinate welfare support activities in response to an incident.

Welfare support activities are those activities which contribute to the welfare support of employees and their families, such as:

- access to medical services
- access to counselling services
- financial support
- necessary transport and accommodation
- pastoral care.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

This unit of competency applies to incident management team members who are required to set up the necessary logistics and ensure that work is carried out in accordance with legislation, company welfare program and associated procedures. They will be required to establish effective welfare support systems, ensure that welfare support systems are effective in operation and focus, and establish workable linkages between welfare and other aspects of organisational life.

They will be required to:

- deal sympathetically with family members
- ensure that family members are aware of the range of support services available
- assist family members to obtain those services
- make recommendations to the organisation concerning changes or improvements to the system.

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This unit of competency applies to an individual working alone or as part of an incident management team and working in liaison with other members of the incident management team and the incident manager, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Notify families of those effected by the incident**	1.1	Ascertain details and circumstances and state of employees affected by the incident
		1.2	Accurately and promptly relay relevant information to families of affected employees
		1.3	Supply appropriate and timely situational reports when necessary
2	**Set up logistical support required for carrying out welfare support activities**	2.1	Determine the logistical requirements to effectively carry out welfare support activities
		2.2	Acquire and set up logistical requirements in accordance with procedures
3	**Coordinate and ensure that welfare support activities are**	3.1	Ensure that personnel conduct welfare support activities in accordance with procedures, reflect a sensitivity to the needs of those affected by the incident, and promote a positive image of the company

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	conducted appropriately	3.2	Coordinate proper documentation of results of welfare support activities
4	**Respond to issues arising from welfare support activities**	4.1	Determine issues arising from welfare support activities
		4.2	Address issues when within the area of responsibility
		4.3	Relay issues outside the area of responsibility to the appropriate personnel for action
		4.4	Follow through issues until final resolution has been reached
		4.5	Maintain communication with appropriate personnel or persons regarding the progress and/or resolution of issues
5	**Contribute to the evaluation of the company welfare support activities**	5.1	Conduct consultations to assess the effectiveness of welfare support activities
		5.2	Provide input/feedback to the appropriate personnel for evaluation of company welfare support activities

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

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Logistical requirements

Logistical requirements include one or more of the following:

- call centre
- setting up a team of appropriate workers to assist
- quick access to relevant files and documents
- arrangements with external agencies
- financial requirements

Issues

Issues arising from welfare support activities include one or more of the following:

- lack of effective communication with family members
- confusion or misunderstandings concerning welfare service provision
- contradictory or misleading information

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- internal confusion or obfuscation by sectors of the organisation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR575B Coordinate welfare support activities in response to an incident

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR575 Coordinate welfare support activities in response to an incident

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR575B Coordinate welfare support activities in response to an incident

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 include the ability to:

- assess logistical requirements for welfare support activities
- communicate effectively and professionally with employees and their families affected by the incident
- coordinate welfare activities
- maintain records and documentation
- identify issues and take action.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework and specific compliance requirements that apply to the organisation
- organisational procedures, including those covering:
  - welfare program
  - communication systems
  - emergency response plans
  - release of information to external bodies
- types of incidents that can arise in the work environment and related risks, responses and equipment
- the role of stakeholders and specialists
- legal responsibilities to those affected by incidents
- rights and responsibilities of those affected by an incident
- incident resources and how to access them
- insurance policies and considerations
- economic impact and considerations.

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.

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- 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
  - must include a simulation of carrying out welfare support activities for an incident, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR622 Build partnerships to improve incident response capacity

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR622B Build partnerships to improve incident response capacity

Application

This unit of competency covers the skills and knowledge required to leverage partnerships to improve the organisation's capabilities to respond to incidents.

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to senior managers, crisis team managers or those in similar roles who are required to initiate and manage external relationships for joint/cooperative efforts towards incident response and plan, coordinate and evaluate activities with the partners.

Generally, the person would be a member of senior management and a member of the crisis management team. Although independent action may be required, he/she will be expected to coordinate, liaise and consult with other members of the team and other appropriate personnel.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify opportunities for specific partnerships**	1.1	Identify opportunities for joint/cooperative efforts towards incident response
		1.2	Undertake consultation within the organisation to identify the types of partnerships and mutual interest to meet organisational needs
		1.3	Develop a strategy on the types of partnership organisations and partnership opportunities
		1.4	Approach specific targeted organisations, discuss expectations, ability to meet those expectations and areas of mutual interest
2	**Develop a framework for the partnership**	2.1	Consult potential partners to develop frameworks that will meet the needs of all partners
		2.2	Establish the characteristics of the partnership with selected partners
		2.3	Confirm partnership characteristics, including structure, scale, roles, goals and timeframes with the partners
		2.4	Develop systems to enhance mutual benefit and value contributions from the partnership

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		2.5	Develop and communicate measures for success to stakeholders
		2.6	Define an agreed exit strategy
3	**Manage the relationship in order to enhance incident response**	3.1	Undertake regular consultation, communication and mutual information sharing with all partners
		3.2	Identify, monitor and review challenges facing the partnership and action issues
		3.3	Seek, communicate, document and review opportunities for learning from the partnership
		3.4	Undertake joint venture exercises to improve incident response capacity where appropriate
		3.5	Provide mutual assistance in ensuring compliance to changes in legislative or regulative requirements
4	**Rebuild partnerships after an incident/exercise**	4.1	Examine incident with partners
		4.2	Explore issues arising from the incident
		4.3	Follow through and address issues
		4.4	Develop resolutions to prevent re-occurrence
		4.5	Disseminate information and resolutions resulting from discussions appropriately
5	**Evaluate the effectiveness of the partnership**	5.1	Evaluate flexibility and appropriateness of responses to issues/challenges facing the partnership
		5.2	Evaluate performance against agreed measures
		5.3	Communicate capability to implement the exit strategy to stakeholders

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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

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.

Duty of care responsibilities under general work health and safety (WHS) Acts and regulations and state/territory and national standards applying to hazardous substances, dangerous goods and major hazards must be met.

Partnerships

Partnerships must relate to a strategic goal or opportunity, including one or more of the following:

- service that covers a gap in internal capacity/capability
- opportunity to learn specific skills and/or current practices
- share industry knowledge (e.g. compliance requirements and approaches to incident planning)

Partner organisations include one or more of the following:

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- parent company
- joint venture partners
- organisations within a given geographical radius
- external agencies

Framework

The framework for the partnership includes:

- size and structure
- roles and responsibilities
- goals
- duration and exit strategy
- systems and/or processes for communications, planning
- measures of performance (qualitative and quantitative)

Challenges

Challenges facing a partnership include one or more of the following:

- establishing a cohesive network for effective incident response
- rebuilding the partnership in the event of an incident with partners
- promoting a positive image of the organisation.

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and/or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)

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- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

Issues

Issues arising from an incident include one or more of the following:

- inability to contact key partners in the event of a crisis
- response times or objectives confused or outside agreed parameters
- gaps or overlaps in response, which reduce effectiveness of the response
- lack of ability to communicate effectively within the organisation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR622B Build partnerships to improve incident response capacity

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR622 Build partnerships to improve incident response capacity

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR622B Build partnerships to improve incident response capacity

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 include the ability to:

- identify strategic partnerships for mutual cooperation and assistance in incident response
- communicate, consult and negotiate effectively with internal and external stakeholders
- plan, coordinate and manage partnership activities to meet goals
- monitor and evaluate partnerships and activities to resolve issues, measure performance and identify improvements
- document strategies, reviews and outcomes.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - release of information to external bodies
  - security and confidentiality
- types of incidents that can arise in the work environment and related risks, responses and equipment
- incident response and disaster planning processes and techniques
- company incident response structures and operations
- the individual's own role within the incident response structure, including its parameters, boundaries and/or limitations
- roles, responsibilities and needs of the individual's own organisation
- roles, responsibilities and needs of other organisations
- the mission, values and culture of the organisations targeted for and within the partnership

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- 'chain of command' (who will drive the partnership and how it relates to decision making in the organisations)

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project/case study which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects/case studies which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project/case study in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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
- 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOMIR650 Manage a crisis

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR650B Manage a crisis

Application

This unit of competency covers the skills and knowledge required to manage the organisation through a crisis.

This unit of competency applies to managers, senior managers and those in similar roles who are required to assess the crisis and related risks, plan for contingencies, implement, monitor and adjust the crisis management plan, and manage resources and post-crisis operations in order to minimise impact of the crisis.

A crisis is an incident of a magnitude that affects the integrity and effectiveness of the organisation or is liable to cause a significant problem to the business.

This unit of competency applies to an individual who is in control of personnel during an incident. At all times they would be liaising and cooperating with other members of the management team, other teams and, where appropriate, external organisations.

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

Pre-requisite Unit

Nil

Competency Field

Incident readiness and response

Unit Sector

Elements and Performance Criteria

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

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1	**Define the crisis**	1.1	Assess crisis and probable implications
		1.2	Identify and monitor secondary threats to situation
		1.3	Assess and evaluate data to determine process/system status
		1.4	Receive, collate and assess external information
		1.5	Identify probable cause of crisis from available information and resources
		1.6	Identify, allocate and confirm roles of personnel in the crisis management process
2	**Implement contingency plans**	2.1	Determine appropriate contingency plans for the organisation
		2.2	Identify additional resources required
		2.3	Coordinate the development of alternative contingency plans to cater for variations in the crisis
3	**Establish communications**	3.1	Activate communication systems
		3.2	Establish communication with appropriate stakeholders, including customers and suppliers
		3.3	Activate reporting processes and ensure continuous monitoring and evaluation of incident
		3.4	Establish/activate command and control facilities
4	**Assess the crisis**	4.1	Conduct a risk assessment of all factors impacting upon the response
		4.2	Conduct an initial assessment of resources required
		4.3	Identify constraints which may impede the response
		4.4	Identify and assess initial response options

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5	**Implement crisis management plan**	5.1	Identify appropriate crisis management plans, including contingency plans, if required
		5.2	Manage response in accordance with plan and available personnel/equipment
		5.3	Prioritise responses taking into account needs of stakeholders
		5.4	Modify plan and deploy additional resources as required
		5.5	Monitor, evaluate and adjust restoration strategies as required
6	**Document and review crisis and response**	6.1	Ensure recording occurs in a timely manner
		6.2	Record and analyse feedback from stakeholders/witnesses
		6.3	Identify and record root cause/cause tree of crisis
		6.4	Generate and distribute required reports and findings to appropriate personnel
7	**Manage post crisis operations**	7.1	Account for and demobilise resources
		7.2	Initiate post-incident recovery
		7.3	Evaluate and document effectiveness of operations
		7.4	Debrief all relevant people
		7.5	Recommend improvements to the crisis management process

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.

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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

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.

Duty of care responsibilities under general work health and safety (WHS) Acts and regulations and state/territory and national standards applying to hazardous substances, dangerous goods and major hazards must be met.

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Incident

An incident is an unintended event, or an unintended consequence of an intended event, including one or more of the following:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents

Incident response

Incident response includes one or more of the following:

- deployment of site incident response personnel
- containing/controlling the incident at source and/or its spread
- search and rescue operations
- engagement of external emergency services (such as fire, ambulance, rescue and military)
- liaison with other agencies (such as environmental, clean-up and specialised troubleshooters)
- evacuation
- hazard control

Incident response actions must:

- be in accordance with and relevant organisation procedures
- use appropriate response equipment, where required
- prioritise the safety and/or successful recovery of personnel and others affected by the incident response
- **not** inhibit effectiveness of the incident response or further contribute to the incident

Communication systems

Communication systems include one or more of the following:

- mobile phones
- satellite phones
- HF/VHF radio
- flags
- flares

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- operating logs
- intercoms
- pager
- two-way radio
- email
- electronic equipment
- other communication methods/equipment defined in organisation procedures

Assessment of crisis

Assessment of a crisis includes consideration of:

- type of incident
- risk to life, property and environment
- hazards
- capability of assigned personnel
- adequacy of allocated equipment
- information gathered from existing plans/databases
- forecasts
- meteorological profiles

Constraints

Constraints that may impede the response to the crisis must be considered and include one or more of the following:

- legislation and organisation procedures
- resources (e.g. time, financial, personnel and organisational)
- prevailing weather and seasonal factors
- restrictions on duration of work or the conditions under which personnel may be employed
- sacred sites, other areas of environmental and cultural significance, wilderness areas, hazardous areas and other restricted areas

Evaluate effectiveness

Evaluating the effectiveness of operations includes consideration of one or more of the following:

- inappropriate or lack of contingency planning
- lack of commitment by the organisation to training and incident response exercises
- deviations from standard operating procedures or incident response plans
- loss of personnel in either practices or incidents
- strategic failures in communications

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOMIR650B Manage a crisis

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOMIR650 Manage a crisis

Modification History

Release 1. Supersedes and is equivalent to PMAOMIR650B Manage a crisis

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 include the ability to:

- interpret information from a range of sources to assess the crisis
- determine, implement, monitor and adjust contingency plans and crisis management plan to meet changing crisis situation/conditions
- minimise escalation of the crisis
- source and manage resources
- communicate effectively with internal and external stakeholders under stress
- complete records and accurately document
- identify and resolve problems
- manage post-crisis recovery and debriefings
- evaluate effectiveness of crisis operations and recommend improvements
- document reviews and outcomes.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- regulatory framework and specific compliance requirements that apply to the organisation
- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
  - release of information to external bodies
- crisis management plans
- crisis management principles
- contingency planning
- types of incidents that can arise in the work environment and related hazards, risks, responses and equipment
- regulatory agency obligations and expectations

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- welfare obligations and responses.

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
  - must include managing a simulated crisis, 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS101 Read dials and indicators

Modification History

Release 1. Supersedes and is equivalent to PMAOPS101C Read dials and indicators

Application

This unit of competency covers the skills and knowledge required to make readings and/or take measurements using common types of plant instrumentation.

This unit of competency applies to operators who are required to identify the units and scales to use, perform the measurements and record the results in prescribed format, level of detail and according to procedures.

This unit of competency applies to reading process instrumentation in any plant or related situation. Readings may need to be made at heights, in wet or restricted conditions, or close to hot or moving equipment and across sites and plants.

In a typical scenario an operator patrols the plant taking a range of readings to complete logs and check on the operation of the plant. The operator needs to interpret the display on the instrument and record the appropriate reading. As part of this process, they will need to check that the instrument is within calibration (where appropriate) and make a judgement as to whether the reading is 'reasonable' or whether some action needs to be taken.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Contribute to controlling hazards in work area**	1.1	Identify hazards in work area
		1.2	Take appropriate action to control risks according to procedures
2	**Identify appropriate measuring device readings**	2.1	Confirm the calibration of the measuring device, where appropriate
		2.2	Select appropriate units on the measuring device
		2.3	Select appropriate scales on the measuring device
3	**Perform measurements**	3.1	Identify the range of results that could be obtained
		3.2	Identify and take account of relevant external factors
		3.3	Perform measurements using appropriate techniques
		3.4	Identify measurements outside the range of expected results
		3.5	Take action on measurements outside expected range according to procedures
4	**Record results**	4.1	Record readings accurately in the appropriate format
		4.2	Record the results to the appropriate level of detail

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts, smoke, vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Dials and indicators

Dials and indicators include one or more of the following:

- analogue dials, such as:
- pressure gauge
- rev counter
- temperature dial
- digital readouts, such as:
- pH meter
- temperature probe
- ammeter
- flow meter
- weigh scales

Calibration checks

Calibration checks include one or more of the following:

- checking the date that the next calibration is required (e.g. weigh scale and pressure gauge)
- using a calibration button on the instrument (e.g. zero button on an ammeter and calibration button on an electronic meter)

Problems

Problems must be reported and corrective action taken according to relevant procedures.

Problems include one or more of the following:

- measuring instrument not fit for use (e.g. not within calibration)
- appropriate measuring device not available
- deviations from normal range of readings
- effect of temperature on material properties

Corrective actions include one or more of the following:

- reporting to an appropriate person
- taking action specified in the procedure

Appropriate personnel

Appropriate personnel include one or more of the following:

- supervisor
- more senior operator
- other designated personnel

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS101C Read dials and indicators

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS101 Read dials and indicators

Modification History

Release 1. Supersedes and is equivalent to PMAOPS101C Read dials and indicators

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 include the ability to:

- accurately perform and record measurements according to procedures
- recognise readings which are out of range or unusual and take action according to procedures
- identify hazard and control risks
- check accuracy of own work and complete workplace forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- basic units of measurement and where they apply
- types and application of measuring devices typically used in the job/work environment and problems that can arise
- graphs and scales relevant to the readings being taken
- organisation procedures relevant to the readings being taken
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - relevant controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must include the use of an appropriate industrial item of equipment
  - may use industry-based simulation for all or part of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMAOPS105 Select and prepare materials

Modification History

Release 1. Supersedes and is equivalent to PMAOPS105C Select and prepare materials

Application

This unit of competency covers the skills and knowledge required to select and prepare materials for use in production processes.

This unit of competency applies to operators who are required to find the right materials, check them, measure and prepare them, if required, and deliver the materials to the process in the right condition.

A typical application of this unit of competency could be an operator preparing a range of chemicals or other substances for use in a batch process. The operator would visually inspect each item for deterioration or damage, and follow procedures to prepare materials. Once prepared, the operator would then assemble the materials for supply to production areas.

This competency applies where mixing, grinding, testing, etc are an incidental part of preparing materials for use in production.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Identify and locate materials**	1.1	Identify material requirements correctly from documentation
		1.2	Identify type, quantity and quality of materials
		1.3	Identify material hazards and handling procedures
		1.4	Locate and check materials to procedures
		1.5	Confirm availability of required quantity of materials
		1.6	Note and report material shortages
2	**Contribute to controlling hazards**	2.1	Identify other hazards in work area
		2.2	Take action to control material hazards as per documentation
		2.3	Take appropriate action to control other hazards in the workplace
3	**Measure quantity of materials**	3.1	Identify measuring requirements and select appropriate measuring equipment
		3.2	Measure and assemble required quantities
		3.3	Check material quantities required
		3.4	Complete required documentation and labelling
		3.5	Deliver materials to correct location
4	**Prepare materials as required**	4.1	Check that hoppers, bins and holding tanks are free from contamination
		4.2	Identify classes of compatible and incompatible chemicals
		4.3	Prepare materials to procedures
5	**Store assembled materials**	5.1	Identify the storage conditions required for the main classes of chemicals

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		5.2	Identify materials that have special storage requirements
		5.3	Store and supply materials
6	**Dispose of waste materials**	6.1	Correctly identify waste materials
		6.2	Dispose of materials to procedures and work health and safety (WHS) and environmental requirements

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

Materials preparation

Materials preparation includes one or more of the following:

- pre-production measuring, assembling and identification of materials
- warming to melt waxy or other materials
- breaking up solid materials into pieces or smaller lumps
- passing materials through an in-line delumper

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- blending a powder or liquid into a solution prior to use in the process
- blending powders prior to production
- dilution of solutions
- preparation of a solution for dosing into a process

Materials

Materials include one or more of the following:

- raw materials
- packaging materials
- consumables

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment

Equipment includes one or more of the following:

- buckets
- stirring paddle
- propeller or drum mixers
- delumpers
- hammers or axes
- measuring equipment, including scales, flow meters and graduated vessels
- hard hats
- goggles/glasses/face shields
- hearing protection (ear muffs and plugs)
- dusk masks/canister masks/self contained breathing apparatus (SCBA)/long range breathers
- gloves/gauntlets

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- safety boots
- antistatic equipment
- overalls/aprons/acid jackets/pants
- handling aids
- other safety equipment

Material hazards and handling procedures

Material hazards and handling procedures include one or more of the following:

- labels
- safety data sheets (SDS)
- verbal direction from supervisor or other person
- other standard sources, such as:
  - enterprise procedures
  - HAZCHEM symbols and codes
  - spill containment and disposal procedures

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS105C Select and prepare materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS105 Select and prepare materials

Modification History

Release 1. Supersedes and is equivalent to PMAOPS105C Select and prepare materials

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 include the ability to:

- identify job requirements and safe work procedures
- identify and operate equipment
- identify hazards and apply hazard control procedures
- complete required workplace forms
- communicate with team and supervisors
- measure and prepare materials to meet requirements
- identify and dispose of waste materials according to work health and safety (WHS) and environmental requirements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of measuring equipment relevant to job/work environment
- classes of compatible and incompatible chemicals and implications in job/work environment
- types of materials in plant and their storage requirements
- routes of entry of chemicals to the body (basic only)
- procedures for safe handling and storage of chemicals and hazardous substances relevant to job/work environment
- types and application of personal protective equipment (PPE) relevant to job/work environment
- labelling requirements (dangerous goods codes, classification numbers and packaging group numbers)
- HAZCHEM symbols and codes relevant to the job/work environment
- organisation procedures relevant to job/work environment
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- environmental requirements related to waste disposal.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.

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- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS201 Operate fluid flow equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS201B Operate fluid flow equipment

Application

This unit of competency covers the skills and knowledge required to operate pumps and valves and other fluid flow equipment in a processing plant.

This unit of competency applies to operators who are required to identify, operate, monitor and troubleshoot the pumps and valves and contribute to a safe working environment. It is typically performed by all operators in a processing plant.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

In a typical scenario, an operator uses a number of general purpose pumps, piping and valves to move liquids from a storage tank area into the processing plant, within and between plant units, to the finished goods tanks. The operator utilises in-line mixers, strainers and filters, valves, controls and meters to complete this work.

This competency covers all general duty pumps, their associated drivers (motors) and valves. The effect of pipe fittings on pump performance and problems/problem analysis is also included.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of fluid flow equipment
2	**Operate pumps**	2.1	Identify the type of pump
		2.2	Start up and shut down pump as required
		2.3	Adjust flow and head/pressure as appropriate to type of pump
		2.4	Complete routine checks and reports and take appropriate action as required
3	**Operate pump drivers**	3.1	Monitor critical variables such as amps, temperature and vibration
		3.2	Keep critical variables in range
		3.3	Recognise trends/patterns which indicate a potential or actual problem with the pump driver
		3.4	Take action to ensure driver as required
4	**Operate valves**	4.1	Identify the type of valve
		4.2	Operate valve in a manner appropriate to the valve type

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		4.3	Complete routine checks and reports and take appropriate action as required
5	**Recognise and take appropriate action on abnormal fluid system situations**	5.1	Monitor fluid flow system frequently and critically throughout shift using measured/indicated data and smell, sight, sound and feel as appropriate
		5.2	Identify impacts of any changes upstream and downstream
		5.3	Recognise situations which may require action
		5.4	Resolve routine problems
		5.5	Take actions on other abnormal situations to make safe and have the situation resolved
6	**Isolate and de-isolate equipment**	6.1	Complete any required pre-start checks
		6.2	Start up/shut down/changeover fluid flow equipment according to the equipment type and duty in liaison with other personnel
		6.3	Isolate equipment
		6.4	Make safe for required work
		6.5	Check plant is ready to be returned to service
		6.6	De-isolate and prepare plant for return to service

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment

Equipment includes one or more of the following:

- pumps (various types of centrifugal and positive displacement)
- valves, such as globe, needle, gate, butterfly, plug cock, wedge plug, ball cock, non-return, diaphragm, pneumatic globe and pneumatic butterfly)
- piping systems and components, including bends and elbows, tee

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pieces, expansion mechanisms, pipe joints, reducers, nipples, orifices, in-line mixers, filters and strainers, flexible hoses and couplings
- shaft seals, such as stuffing boxes, mechanical seals, fluid seals and labyrinth seals

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- cavitation
- seal leaks
- head loss/low flow
- bearing problems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Responding to abnormal situations

Responding to abnormal situations includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat

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- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS201B Operate fluid flow equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS201 Operate fluid flow equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS201B Operate fluid flow equipment

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 include the ability to:

- apply pre-start, start-up and shutdown procedures
- monitor and operate fluid flow equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation of fluid flow equipment
- plant process idiosyncrasies
- physics relevant to fluid flow equipment
- process parameters and limits
- all items on a schematic of the fluid flow system and the function of each
- correct methods of starting, stopping, operating and controlling flow
- relevant alarms and actions
- routine problems, faults and their resolution
- function and troubleshooting of major internal components of pumps and valves and their typical problems.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The assessment must include at least:
  - one (1) type of centrifugal pump, and
  - one (1) type of positive displacement pump, and
  - two (2) different types of valves.

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- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:

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  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS202 Operate fluid mixing equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS202B Operate fluid mixing equipment

Application

This unit of competency covers the skills and knowledge required to operate fluid mixers found in fluid processing plants.

This unit of competency applies to operators who are required to operate, monitor and maintain equipment using relevant procedures and contribute to a safe working environment. This unit of competency is typically performed by all operators using mixing equipment.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

In a typical scenario an operator uses a baffled mixing tank (or other mixer) to make a product to specification. This covers the loading of liquid and perhaps solid materials into the mixing equipment. In this example the operator monitors the mixing to ensure the components are dispersed appropriately and checks the resulting product to ensure it complies.

This unit of competency covers the mixing of two or more materials to make a product. This may be achieved through various means ranging from continuous mixing processes as typically found in oil plants to batch mixing as commonly used in chemical plants and paint manufacture.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of fluid mixing equipment
2	**Prepare mixing equipment**	2.1	Identify type of fluid mixer
		2.2	Identify appropriate applications for the mixer type
		2.3	Check materials
3	**Operate fluid mixing equipment in accordance with procedures**	3.1	Charge materials
		3.2	Start up/shut down fluid mixing equipment
		3.3	Adjust mixing conditions
		3.4	Check product
		3.5	Adjust product as instructed or to procedure
		3.6	Discharge product
		3.7	Complete routine checks and reports, taking action on unexpected readings and trends
4	**Recognise and take appropriate**	4.1	Monitor fluid mixing equipment frequently and critically throughout shift using measured/indicated data and

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	action on abnormal situations		senses
		4.2	Identify impacts of any changes upstream and downstream
		4.3	Recognise situations which may require action
		4.4	Resolve routine problems
		4.5	Take actions in accordance with procedures on other abnormal situations to make safe and have the situation resolved
5	**Isolate and de-isolate equipment**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down/changeover fluid mixing equipment according to the equipment type and duty in liaison with other personnel
		5.3	Isolate plant
		5.4	Make safe for required work
		5.5	Check plant is ready to be returned to service
		5.6	De-isolate and prepare plant for return to service

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

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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

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.

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Equipment

Equipment includes one or more of the following:

- mixers for low, medium and high viscosity fluids
- jet mixing

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- top and side entry mixers
- propeller, and pitched and square bladed turbine impellers

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- incorrect mixing time
- incorrect power consumption
- uniformity issues
- vortexing
- aeration

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Resolve routine problems

Resolving routine problems includes changing one or more of the following:

- position and angle of baffles where appropriate
- impellor (angle, size, shape or speed)
- feed rate of fluids

Mixing conditions

Mixing conditions will be adjusted by one or more of the following:

- baffles
- mixer speed
- mixing duration

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

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Action on abnormal situations

Action on abnormal situations includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS202B Operate fluid mixing equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS202 Operate fluid mixing equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS202B Operate fluid mixing equipment

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:

- apply pre-start, start-up and shutdown procedures
- monitor and operate mixing equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.
-

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the mixing system and the function of each
- fluid mixing principles including shear, viscosity and concepts of uniformity
- principles of operation of fluid mixing equipment
- physics of operation
- correct methods of starting, stopping, operating and controlling mixing equipment
- typical mixing problems, and their causes and remedy, within operator's scope of skill level and responsibility
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- environmental requirements related to waste disposal
- relevant alarms and actions
- plant process idiosyncrasies
- routine problems, faults and their resolution
- function and troubleshooting of major components and their problems
- corrective action appropriate to the problem cause

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- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities).

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS204 Select and use utilities and services

Modification History

Release 1. Supersedes and is equivalent to PMAOPS204B Use utilities and services

Application

This unit of competency covers skills and knowledge required to select and use a range of utilities and services in the plant.

This unit of competency applies to operators who are required to select the appropriate utility/service from those provided to the plant and recognise and respond to operational problems.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

In a typical scenario an operator will be able to identify and select utilities and services used on a day-to-day basis. These will be provided to a process plant and will consist of instrument and plant air, nitrogen, plant water, steam, flushing oil and other utilities/services required for a particular process. The operator uses these utilities/services as required. The correct use and application of these substances is essential to plant and operator safety and the continued performance of the process.

This unit of competency applies to any/all service utilities which form part of the utility system for the plant, typically:

- steam (saturated and superheated)
- air (process, instrument and breathable)
- water (cooling, boiler feed, plant and waste)
- inert atmosphere (nitrogen and carbon dioxide)
- flushing oil.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Identify work requirements
		1.2	Identify and control hazards
		1.3	Coordinate with appropriate personnel
2	**Select and use utilities and services**	2.1	Identify utilities and services available in the plant
		2.2	Identify key properties, applications and limitations of each utility and service
		2.3	Select appropriate utility/service for the required duty
		2.4	Use selected utility/service to procedures
3	**Respond to problems**	3.1	Monitor use of utility/service frequently and critically throughout shift using measured/indicated data and smell, sight, sound and feel as appropriate.
		3.2	Recognise operational problems
		3.3	Analyse cause of operational problems within scope of skill level
		3.4	Take action to remedy operational problems in accordance with procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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

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.

Service utilities

Service utilities include one or more of the following:

- steam (saturated and superheated)
- air (process, instrument and breathable)
- water (cooling, boiler feed, plant and waste)
- inert atmosphere (nitrogen and carbon dioxide)
- flushing oil

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- non-supply of products and elements
- variation in product and element feed rates
- variations in temperature, pressure and flow
- blockages or leakage

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Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- dust or other atmospheric hazards

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- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS204B Use utilities and services

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS204 Select and use utilities and services

Modification History

Release 1. Supersedes and is equivalent to PMAOPS204B Use utilities and services

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 include the ability to:

- select the required utility/service
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate the causes of problems to an item of equipment within the production system and to distinguish between causes of problems/alarm/fault indications, such as:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - variations in product parameters (temperature, flows, pressure and levels)
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the utilities system and the function of each
- differences between grades/types of services (e.g. grades of steam, air and nitrogen)
- differences in use and methods between each service and utility
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- physics and chemistry relevant to the utility and its use
- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- types and causes of utility problems within operator's scope of skill level and responsibility.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring selection and use of utilities and services and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS205 Operate heat exchangers

Modification History

Release 1. Supersedes and is equivalent to PMAOPS205B Operate heat exchangers

Application

This unit of competency covers the skills and knowledge required to operate heat exchangers.

This unit of competency applies to operators who are required start up and shut down heat exchangers in accordance with procedures, make adjustments to flow rate, temperature and pressure, as required, and solve heat exchanger problems.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all heat exchangers, examples include:

- plate
- Utube
- spiral
- bayonet
- air cooled fin
- shell and tube (all variants of design)
- scraped surface
- vessel jackets/coils.

This unit of competency does not cover superheaters or waste heat boilers, which are treated as part of steam generating equipment.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of heat exchanger
2	**Operate heat exchangers in accordance with procedures**	2.1	Identify the type of heat exchanger and duty
		2.2	Adjust flow rates, temperatures and pressure as appropriate to type of heat exchanger and duty
		2.3	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor heat exchanger frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe

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			and have the situation resolved
4	**Isolate and de-isolate equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover heat exchanger according to the plant type and duty in liaison with other personnel
		4.3	Isolate plant
		4.4	Make safe for required work
		4.5	Check plant is ready to be returned to service
		4.6	De-isolate and prepare plant for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Heat exchanger duties

Heat exchanger duties include a minimum of one of the following:

- heating
- cooling
- cryogenic
- reboilers
- condensers
- gas dryers
- gas coolers
- refrigeration (evaporators/condensers)

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- damage to heat exchanger due to overheating and/or under/over pressurising
- factors that affect heat exchanger efficiency (scale build-up, fouling, internal leakage, air lock, turbulence and corrosion)
- leakage or gasket problems
- recognising when maintenance is required

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Start up/shut down as required

Start up/shut down as required includes:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments
- carrying out minor maintenance
- identifying and reporting problems outside operator's scope of

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responsibility
- identifying and controlling hazards related to heat exchangers and their integral equipment, including pressure vessels

Action Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS205B Operate heat exchangers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS205 Operate heat exchangers

Modification History

Release 1. Supersedes and is equivalent to PMAOPS205B Operate heat exchangers

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 include the ability to:

- start up and shut down heat exchangers
- monitor and operate heat exchange equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the heat exchanger system and the function of each
- principles of operation of heat exchangers
- correct methods of starting, operating and shutting down heat exchangers
- physics and chemistry relevant to the process unit
- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- plant process idiosyncrasies
- causes of head loss and change in heat transfer coefficient/rates
- corrective action appropriate to the problem cause
- function and troubleshooting of major internal components, including tubes and baffles, and typical problems
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS208 Operate chemical separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS208B Operate chemical separation equipment

Application

This unit of competency covers the skills and knowledge to operate chemical separation equipment where the feed is usually single phase.

This unit of competency applies to operators who are required to start up and shut down separation operations in accordance with procedures and monitor and make adjustments to the equipment.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all types of chemical separation equipment for gaseous, liquid and solids separation duties, where the feed is essentially in a single phase and the separation relies on a change of the material or a chemical process to enact the separation. Examples include crystallisers, ion-exchange filters, precipitators and absorbers.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on chemical separation equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of chemical separation equipment
2	**Operate chemical separation equipment in accordance with procedures**	2.1	Identify the type of chemical separation equipment
		2.2	Adjust flow and pressure as appropriate to type of separation equipment
		2.3	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor chemical separation equipment frequently and critically throughout shift using measured/indicated data and smell, sight, sound and feel as appropriate
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate equipment**	4.1	Complete any required prestart checks
		4.2	Start up/shut down/changeover chemical separation equipment according to the plant type and duty in liaison with other personnel
		4.3	Isolate chemical separation equipment
		4.4	Make safe for required work
		4.5	Check chemical separation equipment is ready to be returned to service
		4.6	De-isolate and prepare chemical separation equipment for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine

Routine problems must be resolved by applying known solutions.

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problems

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- cartridge/filter change
- reagent/medium activity
- blockages/build-up
- contaminants

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments (e.g. flow and pressure)
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to chemical separation equipment and surrounding areas

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

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Operate Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS208B Operate chemical separation equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS208 Operate chemical separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS208B Operate chemical separation equipment

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 include the ability to:

- start up and shut down chemical separation equipment
- monitor and operate chemical separation equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the separator system and the function/s of each
- principles of operation of separation equipment
- factors affecting efficient operation of the separation equipment
- correct methods of starting, stopping, operating and controlling the equipment
- physics of operation, including behaviour of solids, liquids and gases, effects of phase changes, effects of temperature and pressure
- chemistry of operation, including simple chemical reactions, elements, compounds and mixtures
- function and troubleshooting of major internal components, including reagents, contaminants, supports, nozzles and grids, and typical problems
- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS210 Operate solids handling equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS210B Operate particulates handling equipment

Application

This unit of competency covers the skills and knowledge required to operate equipment used to store and convey solids.

This unit of competency applies to operators who are required to manage storage and transfer of solids in required quality and quantity, monitor equipment, carry out minor maintenance according to procedures, and recognise problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

The unit of competency applies to solids handling equipment, including:

- mechanical conveyors/feeders (e.g. belt, vibrating, screw and flight; and feeders, such as screw, star, slide, volumetric and weight)
- pneumatic conveyors, including aspects, such as dense phase, disperse phase, pressure and vacuum
- storage (e.g. silos and hoppers, purging hoppers and stockpiles)
- bulk tankers, transportable containers and intermediate storage.

In a typical scenario the operator would control the conveyor systems transporting solids into or out of storage (e.g. silos, stockpiles). This means setting up, starting and stopping mechanical or pneumatic conveyor systems and their feeder systems (if any) to convey the materials from one point to another (e.g. between storage units, from storage to packing area, between processes). During the process the operator would monitor the operations and take appropriate action to keep solids moving correctly. This could include removing blockages and preventing rat holing or bridging in hoppers/silos.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate conveyors/ feeders in accordance with procedures**	2.1	Identify the type of conveyor/feeder
		2.2	Operate ancillary equipment
		2.3	Adjust rate of transfer as appropriate to type of solids handling equipment and duty
		2.4	Complete routine checks, logs and paperwork, taking action on unexpected observations, readings and trends
3	**Transfer solids**	3.1	Check source, destination and route of planned transfer
		3.2	Check quality, quantity and location of stored solids
		3.3	Transfer solids into, out of and between storage units as

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			required
		3.4	Supply customers with correct quality and quantity in a timely manner
4	**Recognise and take action on abnormal situations in accordance with procedures**	4.1	Monitor solids handling equipment frequently and critically throughout shift using measured/indicated data and senses
		4.2	Identify impacts of any changes upstream and downstream
		4.3	Recognise situations which may require action
		4.4	Resolve routine problems
		4.5	Take actions on other abnormal situations to make safe and have the situation resolved
5	**Isolate and de-isolate equipment**	5.1	Complete any required prestart checks
		5.2	Start up/shut down/changeover solids handling equipment according to the plant type and duty in liaison with other personnel
		5.3	Isolate plant
		5.4	Make safe for required work
		5.5	Check plant is ready to be returned to service
		5.6	De-isolate and prepare plant for return to service

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.

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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

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 may be written, verbal, visual, computer-based or in some other form. They include one or any combination of:

- emergency procedures
- work instructions
- standard operating procedures
- safe work method statements
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- material falling from conveyor
- pinch points and entanglement
- electricity
- gas
- gases and liquids under pressure
- structural hazards

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- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- damage to solids
- damage to conveyor and structures
- cleanliness of conveyor
- contamination of stored stock
- rat holing and bridging in silos
- routing issues

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty

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- start up and shut down to/from other conditions/situations experienced on the plant

Action

Action in accordance with procedures includes all of the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments
- carrying out minor maintenance
- identifying and reporting problems outside operator's scope of responsibility
- identifying and controlling hazards related to equipment

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Ancillary equipment

Ancillary equipment includes one or more of the following:

- fans/blowers
- pulley/drum drives
- hydraulic devices
- chutes and bins

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS210B Operate particulates handling equipment

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS210 Operate solids handling equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS210B Operate particulates handling equipment

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 include the ability to:

- start up and shut down conveying equipment
- monitor and operate solids handling equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- particle size and shape relevant to the operation (reactivity, solubility, colour, health and safety, angle of repose, angle of slide, explosivity, static electricity, density and bulk density)
- correct methods of starting, stopping, operating and controlling flow
- principles of operation of plant/equipment
- process parameters and limits, including temperature, pressure, flow and amps
- types and causes of conveyor or storage problems and their resolution
- relevant alarms and actions
- function and troubleshooting of major internal components and their problems
- hazards that may arise in the job/work environment, and:
- their possible causes
- potential consequences
- appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence:
- should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
    - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
    - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
    - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:

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  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMAOPS211 Operate manufacturing extrusion systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS211B Operate manufacturing extruders

Application

This unit of competency covers the skills and knowledge required to operate extruders and related equipment to produce plastic granules/pellets from polymer resin and similar extrusions, e.g. powder coating resin.

This unit of competency applies to operators who are required to start up and shut down the extrusion system, build the extrusion rate up correctly, monitor and adjust the system to maintain the required output rate and quality, and clean and maintain the system according to procedures.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all items of equipment and unit operations which form part of the extrusion system. Examples include:

- extruders
- additive (including masterbatch) systems
- input/output feeder systems
- granule/pellet cutting and cooling systems
- barrel/head heating and cooling systems.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of extruder system
2	**Operate extrusion system in accordance with procedures**	2.1	Identify the type of extruder, the ancillaries and their duty
		2.2	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		2.3	Adjust extrusion system to achieve required output rate and quality with maximum plant efficiency
		2.4	Change rate, grade or specification smoothly
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor extrusion system frequently and critically throughout shift using measured/indicated data and senses
		3.2	Inspect pellet/granule properties and recognise and correct problems
		3.3	Identify impacts of any changes upstream and downstream
		3.4	Recognise situations which may require action
		3.5	Resolve routine problems

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		3.6	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate extruder system**	4.1	Complete any required pre-start checks.
		4.2	Start up/shut down extrusion system according to the plant type and duty in liaison with other personnel
		4.3	Isolate extrusion system
		4.4	Make safe for required work
		4.5	Check extrusion system is ready to be returned to service
		4.6	De-isolate and prepare extrusion system for return to service
5	**Change production rates and/or product grade/specification**	5.1	Predict from rates and schedule when a transition will be required
		5.2	Clean extrusion equipment to requirements according to procedures
		5.3	Manage transitions smoothly and in a timely manner
		5.4	Minimise scrap/off grade as a result of a transition

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)

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- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- knife/blade/cutter adjustment
- screen pack preparation and changes
- granule/pellet properties not to specification
- granule/pellet cooling systems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS211B Operate manufacturing extruders

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Links

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Assessment Requirements for PMAOPS211 Operate manufacturing extrusion systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS211B Operate manufacturing extruders

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 include the ability to:

- start up and shut down extrusion system
- monitor and operate extrusion system to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- clean equipment according to procedures
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles/physics of operation of operation of extrusion equipment, including effects of temperature, viscosity and pressure, and properties of materials being extruded
- major items of equipment which comprise the extrusion system and their functions
- routine problems, faults and their resolution
- relevant alarms and actions
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed

being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMAOPS213 Package product/material

Modification History

Release 1. Supersedes and is equivalent to PMAOPS213B Package product/material

Application

This unit of competency covers the skills and knowledge required to operate a packing line to package materials and products.

This unit of competency applies to packing lines for various products/materials, for example those that:

- dispense liquid products into drums or plastic containers
- pack filled containers into cartons
- stack filled containers onto pallets.

The unit of competency applies to operators who are required to identify job requirements, select and prepare the materials, set up the packing line and any ancillary equipment, and monitor the line during the packaging process.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of packaging equipment
2	**Prepare packaging equipment and materials for packaging**	2.1	Identify from documentation the type, quantity and quality of product to be packed
		2.2	Identify the range of packaging materials and ancillaries and their specific functions
		2.3	Ensure packaging materials are available in accordance with documentation
		2.4	Select and prepare packaging materials according to compatibility with content, to procedures
		2.5	Check packaging materials for correct labels/safety information
		2.6	Select appropriate measuring equipment
		2.7	Select and fit appropriate dispensing equipment
		2.8	Check all parts of line for damage, contamination or blockage
		2.9	Set up line for required quantity of product and labels to procedures

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3	**Operate packaging equipment in accordance with procedures**	3.1	Fill package
		3.2	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
4	**Recognise and take action on abnormal situations in accordance with procedures**	4.1	Monitor packaging equipment frequently and critically throughout shift using measured/indicated data and senses
		4.2	Identify impacts of any changes upstream and downstream
		4.3	Recognise situations which may require action
		4.4	Resolve routine problems
		4.5	Take actions on other abnormal situations to make safe and have the situation resolved
5	**Isolate and de-isolate equipment**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down packaging equipment according to the plant type and duty in liaison with other personnel
		5.3	Isolate packaging equipment
		5.4	Make safe for required work
		5.5	Check packaging equipment is ready to be returned to service
		5.6	De-isolate and prepare packaging equipment for return to service

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.

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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

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

Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass

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- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- damage to packaging line
- damage to packaging
- contamination
- blockages
- overfill/underfill

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Equipment

Equipment will be selected as required from the following:

- packaging

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- labelling
- lifting
- palletising
- storing
- measuring
- dispensing

Packaged products

Packaged products include one or more of the following:

- liquids (such as paint, detergents and chemicals)
- solids (powders and pellets)
- gases and liquified gases

Packaging

Packaging includes one or more of the following:

- tins and cans
- drums
- bags and sacks
- semi-bulk (such as bulker boxes and pallecons)
- gas cylinders or drums

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS213B Package product/material

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS213 Package product/material

Modification History

Release 1. Supersedes and is equivalent to PMAOPS213B Package product/material

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 include the ability to:

- identify job requirements and materials and equipment to use
- start up and shut down packaging equipment
- monitor and operate equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- HAZCHEM and labelling requirements
- safety data sheets (SDS)
- compatibility of packaging materials with content
- effect of temperature and pressure on properties of substances
- principles of operation of plant/equipment
- process parameters and limits, including temperature, pressure, flow and pH
- types and causes of problems within operator's scope of skill level and responsibility
- relevant alarms and actions
- correct methods of starting, stopping, operating and controlling packer
- function and troubleshooting of major components and their problems
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS216 Operate local control system

Modification History

Release 1. Supersedes and is equivalent to PMAOPS216B Operate local control system

Application

This unit of competency covers the skills and knowledge required to operate a local control panel.

These controllers use simple control algorithms and only a limited number of control loops. Typically it will be located on the plant, but may be located off-plant. This unit of competency also applies to simple panels in a control room which are not part of the main control panel.

This unit of competency applies to operators who are required to start up and shut down equipment using the local control system; monitor and control process variables, such as temperature or pressure; operate valves and pumps to add raw materials and/or additives; and discharge product.

The operator is expected to be capable of performing all parts of this unit of competency. Generally the operator would be part of a team during start-up and shutdown procedures. At all times they would be liaising and cooperating with other members of the team.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant units being controlled
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of plant units being controlled
2	**Interface with the control panel**	2.1	Monitor the process using the operator interfaces and keep appropriate personnel informed on developments
		2.2	Select appropriate controller modes to ensure the effective control of the process
		2.3	Undertake required set point/output changes to optimise plant and process requirements
		2.4	Access historical data and information
		2.5	Acknowledge messages and alarms
3	**Control the process using the local control system**	3.1	Obtain relevant data and information from the control system by applying systems knowledge
		3.2	Identify the status of individual pieces of equipment from the control panel and use information to identify potential faults
		3.3	Interpret alarms and prioritise steps to ensure control of system is maintained

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		3.4 Minimise fluctuations and variations in process through the interpretation of existing trends and control schematics
		3.5 Make required set point/output changes to meet plant and process requirements
		3.6 Take other appropriate action as required
		3.7 Record process variations/irregularities in accordance with procedures
4	**Facilitate planned and unplanned process start-ups and shutdowns**	4.1 Respond to all alarms and take appropriate action
		4.2 Maintain coordination with all outside services and operations in order to assist in the correct identification and reporting of faults
		4.3 Conduct planned start-up and shutdown processes to procedures
		4.4 Conduct unplanned start-up and shutdown processes to procedures
		4.5 Communicate with all operational areas and personnel affected by unplanned events to ensure safety is maintained during the process
		4.6 Implement all required and stated emergency responses and ensure the outcomes of these responses are communicated to all affected areas
		4.7 Log all required information for further action to provide a historical record of all events

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures

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- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- variation/loss of feed
- unstable control of pressure, temperature level and flows
- control equipment failure
- process plant trips
- change in atmospheric conditions (rain, temperature, wind and lightning)
- emergency situations
- loss of power/utilities

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by:

- using local controller in the plant

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Operator interfaces

Operator interfaces include one or more of the following:

- keyboards/key pads
- track ball/mouse
- touch screen
- monitor
- standalone devices

Equipment

This unit includes all items of equipment which form part of the production/processing system. Equipment will be selected as required from the following:

- plant items requiring only simple control
- programmable logic controllers (PLCs)
- hard wired control and alarm panels
- analogue control systems
- personal computers
- printers
- fire and gas detection/protection systems
- emergency shutdown systems
- communications systems

Appropriate action

Appropriate action includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Start up/shut down

Start-up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from all other conditions experienced on the plant (i.e. from any condition to any condition experienced on the plant)

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS216B Operate local control system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS216 Operate local control system

Modification History

Release 1. Supersedes and is equivalent to PMAOPS216B Operate local control system

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 job requirements
- obtain and interpret data from the control system
- monitor and control individual items of equipment to meet specifications
- conduct planned and unplanned start-ups and shutdowns according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- distinguish between causes of problems/alarms/fault indications, such as:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - equipment design deficiencies
  - product parameters (temperature, flows, pressure and levels)
- identify hazards and apply hazard control procedures
- complete workplace forms
- communicate with team and supervisors.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the controller and the function of each
- principles of operation and location of the process/production equipment
- specific plant process operations
- product specifications and tolerances
- systems operating parameters
- basis of control for the process
- emergency shutdown procedures
- process-specific science (physics, chemistry and biochemistry) to the level required to recognise and resolve routine problems

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- mathematics to the level required to interpret control data, recognise trends and take appropriate action
- process drawings, e.g. piping and instrumentation diagram (P&ID), process flow diagram (PFD) and cause and effect
- instrumentation and control systems, e.g. relevant primary sensing devices, final control elements, transducers/transmitters
- simple control loops, including proportional integral derivative (PID) control, set points, controlled variable and indicated variable
- organisation procedures
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- It may be appropriate to assess this unit concurrently with units such as:
  - teamwork
  - communication
  - safety
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - may include the use of an appropriate local controller controlling an industrial plant requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use an appropriate local controller linked to a simulator which simulates an industrial plant requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.

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- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions.
- Current industry skills are the knowledge, skills and experience required by VET trainers and assessors and those who provide training and assessment under supervision to ensure that their training and assessment is based on current industry practices and meets the needs of industry.
- Current industry skills may be informed by consultations with industry and may include, but is not limited to:
  - having knowledge of and/or experience using the latest techniques and processes
  - possessing a high level of product knowledge
  - understanding and knowledge of legislation relevant to the industry and to employment and workplaces
  - being customer/client-oriented
- possessing formal industry and training qualifications

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training content that reflects current industry practice.

Links

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PMAOPS217 Operate wet milling equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS217B Operate wet milling equipment

Application

This unit of competency covers the skills and knowledge required to operate wet milling equipment and its ancillary equipment.

Wet milling equipment is used in plants that manufacture paint and other materials. The wet milling equipment may be vertical or horizontal mills and may incorporate rolls, balls or beads as the milling medium.

This unit of competency applies to operators who are required to start up and shut down the equipment, process monitoring and planning for maintenance, contribute to optimisation, and identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate mill in accordance with procedures**	2.1	Identify the type of wet mill and duty
		2.2	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		2.3	Adjust mill, as appropriate to type and duty
		2.4	Change rate, grade or specification smoothly
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor mill operating condition frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate equipment**	4.1	Complete any required pre-start checks
		4.2	Confirm raw materials are available and correct
		4.3	Prepare pre-mixer and introduce raw materials to pre-mixer if required
		4.4	Start up/shut down wet mill according to plant type and duty in liaison with other personnel
		4.5	Isolate wet mill
		4.6	Make safe for required work
		4.7	Check wet mill is ready to be returned to service
		4.8	De-isolate and prepare wet mill for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- condition and life of beads
- condition of rollers/balls
- cooling system fouling
- blocked filters or piping
- high/low levels
- loss of process cooling resulting in high process temperatures
- equipment failure or shutdown resulting in loss of feed to process
- excess/unexpected sand production
- composition changes

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

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- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Wet milling equipment

Wet milling equipment will be selected as required from the following:

- vertical
- horizontal
- bead mills
- roll/ball-type mills

Ancillary equipment

Ancillary equipment includes one or more of the following:

- pre-mix vessels
- coolers, cooling jackets and heat exchangers
- pumps
- vessels, tanks
- piping systems
- valves and flanges
- sumps and drains

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS217B Operate wet milling equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS217 Operate wet milling equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS217B Operate wet milling equipment

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 include the ability to:

- start up and shut down wet mill equipment
- monitor and operate wet mill equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Hazards include one or more of the following:

- principles of operation of milling equipment
- process and product variables
- bead/ball/rod life (if used in process)
- physics and chemistry relevant to the process unit
- process parameters and limits, e.g. temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- correct methods of starting, stopping, operating and controlling mill
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:

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  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS220 Monitor chemical reactions in the process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS220B Monitor chemical reactions in the process

Application

This unit of competency covers the skills and knowledge required to operate a reaction system which forms an integral part of a production process.

The reactor and its control will be relatively simple, operated in a stand-alone manner. The reaction may, or may not, include the use of catalyst (either homogeneous or heterogeneous phase).

The vessel in which the reaction is occurring may be a purpose built 'kettle' or other reaction vessel or it may simply be a stirred tank. These are typically found in small batch plants, although appropriate examples might also exist in larger plants. Processes may be batch or continuous.

This unit of competency applies to operators who are required to monitor the reactor operation, make adjustments to process or product properties as directed or to procedure and identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This competency does not cover operating a control panel. Where this is required the appropriate control unit should be used.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate reaction system in accordance with procedures**	2.1	Identify the type of reactor and duty
		2.2	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		2.3	Adjust reactor, as appropriate to type and duty
		2.4	Change rate, grade or specification smoothly
		2.5	Charge/discharge reactor
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor reactor frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems

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		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate plant**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down /changeover reactor according to the plant type and duty in liaison with other personnel
		4.3	Isolate reactor
		4.4	Make safe for required work
		4.5	Check reactor is ready to be returned to service
		4.6	De-isolate and prepare reactor for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine

Routine problems must be resolved by applying known solutions.

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problems

Routine problems are predictable and include one or more of the following:

- variations in material composition
- variation in ambient conditions
- control of reaction temperature
- adjustments to meet product specifications

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS220B Monitor chemical reactions in the process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS220 Monitor chemical reactions in the process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS220B Monitor chemical reactions in the 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, and include the ability to:
- start up and shut down reaction system
- monitor and control reaction conditions
- weigh, measure and/or control the addition of reactants and other materials
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment

identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the type of reactor(s) used and its/their characteristic/s
- the nature/condition of materials at each stage of the reaction, the changes which have occurred in that stage and why they have occurred
- chemical reactions, including the effect of changing reaction variables, such as temperature, concentration and pH
- the application of basic chemical equations
- methods of controlling the reaction, including rate and yield
- types and causes of problems within operator's scope of skill level and responsibility
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS221 Operate and monitor prime movers

Modification History

Release 1. Supersedes and is equivalent to PMAOPS221B Operate and monitor prime movers

Application

This unit of competency covers the skills and knowledge required to operate a prime mover and its ancillary equipment.

Prime movers are large high voltage/current electrical motors or diesel engines that are used to drive a high pressure pump or compressor.

A prime mover is a complex, independent item of equipment with a specialised start-up and shutdown procedure. It may have its own control panel and inbuilt vibration monitoring equipment.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor its performance, identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit does not apply to close coupled motors which are operated as part of the equipment.

The operation of a prime mover may require a 'ticket' (special licence) in some jurisdictions.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate prime mover in accordance with procedures**	2.1	Identify the type of prime mover and duty
		2.2	Operate ancillary equipment
		2.3	Adjust prime mover as appropriate to type and duty
		2.4	Complete routine checks, logs and paperwork, taking action on unexpected observations, readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor prime mover, air supply, lubrication system and cooling system frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems

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		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate equipment**	4.1	Complete any required pre-start activities, including protection systems
		4.2	Start up/shut down prime mover and ancillary equipment according to plant type and duty in liaison with other personnel
		4.3	Isolate prime move
		4.4	Make safe for required work
		4.5	Check prime mover is ready to be returned to service
		4.6	De-isolate and prepare prime mover for return to service

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- variation in power/fuel supply
- vibration
- overheating
- fouling of turbine/engine/exchangers
- lubrication quality
- ancillary equipment failures
- prime mover failure or malfunction
- electrical failure or malfunction
- mechanical failure/malfunction
- equipment design deficiencies
- quality measurement inaccuracy, e.g. analyser and manual sampling deficiencies
- fuel quality

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant

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- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Prime movers

Prime mover includes one or more of the following:

- high voltage/current electrical motor
- turbine
- diesel engine

Ancillary equipment

Ancillary equipment includes one or more of the following:

- governing system
- power supply
- safety and shutdown system
- cooling systems

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS221B Operate and monitor prime movers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS221 Operate and monitor prime movers

Modification History

Release 1. Supersedes and is equivalent to PMAOPS221B Operate and monitor prime movers

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 include the ability to:

- start up and shut down prime mover
- monitor and operate equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- prime mover operating principles, including fuel injection, lubrication, cooling, ignition, induction and exhaust power supply
- prime mover operating parameters and capacities, including flows, pressures temperatures and speeds
- safety systems and procedures
- relevant alarms and actions
- correct methods of starting, stopping, operating and controlling flow
- types and causes of problems within operator's scope of skill level and responsibility, including function and troubleshooting of major internal components and their problems and their resolution
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS222 Operate and monitor pumping systems and equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS222B Operate and monitor pumping systems and equipment

Application

This unit of competency covers the skills and knowledge required to operate pumping systems, which are driven by prime movers; and ancillary equipment.

The pumps covered by this unit of competency typically are used for hydrocarbon transmission lines.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor its performance, identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

PMAOPS221 PMAOPS221 Operate and monitor prime movers OR

PMAOPS324 Operate a gas turbine

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate pumping systems in accordance with procedures**	2.1	Identify the type of pumping system and duty
		2.2	Operate ancillary equipment
		2.3	Adjust pumping system as appropriate to type and duty
		2.4	Complete routine checks, logs and paperwork, taking action on unexpected observations, readings and trends
		2.5	Verify the operational condition of all flanges, gaskets and seals to ensure that the operational integrity of these components is maintained within stated operational tolerances and to avoid any environmental damage
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor pumping system, filter system and lubrication system frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems

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		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover pumping system according to plant type and duty in liaison with other personnel
		4.3	Isolate pumping system
		4.4	Make safe for required work
		4.5	Check pumping system is ready to be returned to service
		4.6	De-isolate and prepare pumping system for return to service

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- variation in feed
- vibration
- control of level, temperature, pressure and flow
- blockages
- overheating
- overloading

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty

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- start up and shut down to/from other conditions/situations experienced on the plant

Pumps

Pumps include one or more of the following:

- beam pumps
- electrical submersible pumps
- jet pumps
- centrifugal pumps
- positive displacement pumps (e.g. reciprocating pumps)

Ancillary equipment

Ancillary equipment includes one or more of the following:

- various drivers (e.g. diesel engine, electric motor and steam turbine)
- vibration monitors
- lubrication pumps and equipment
- gear boxes and barring gear instrumentation
- filters

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS222B Operate and monitor pumping systems and equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS222 Operate and monitor pumping systems and equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS222B Operate and monitor pumping systems and equipment

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 include the ability to:

- start up and shut down pumping system
- monitor and operate equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- pumping system/equipment operating parameters
- equipment terminology
- safety systems and procedures
- principles of operation of pump, ancillaries and components
- physics and chemistry relevant to the pump, ancillaries and the materials processed
- process parameters and limits, e.g. temperature, pressure, flow and pH
- relevant alarms and actions
- correct methods of starting, stopping, operating and controlling process
- function and troubleshooting of major components and their problems
- corrective action appropriate to the problem cause
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Where competency is also required and has not been achieved in
  - PMAOPS221 Operate and monitor prime movers OR
  - PMAOPS324A Operate a gas turbine
- It may be co-delivered and co-assessed.
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an industrial pump appropriate to this unit allowing demonstration of operation
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS223 Operate and monitor valve systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS223B Operate and monitor valve systems

Application

This unit of competency covers the skills and knowledge required to operate and monitor valves and ancillary equipment as part of controlling a process.

The valves covered by this unit of competency may be part of a hydrocarbons transport pipeline, gas distribution network or similar process.

This unit of competency applies to operators who are required to operate, monitor and maintain the equipment using relevant procedures and identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of equipment
2	**Operate valve systems in accordance with procedures**	2.1	Identify the type of valves and valve systems
		2.2	Operate ancillary equipment
		2.3	Adjust valves and valve systems as appropriate to type and duty
		2.4	Complete routine checks, logs and paperwork, taking action on unexpected observations, readings and trends
		2.5	Check the valve operational integrity to minimise the risk of valve leakages and failures
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor valves and valve systems frequently and critically throughout shift using measured/indicated data and senses
		3.2	Regulate or alter valve sequences to control the flow rates of fluid during the process to meet changing production conditions and demands
		3.3	Identify impacts of any changes upstream and downstream
		3.4	Recognise situations which may require action
		3.5	Resolve routine problems
		3.6	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate valves**	4.1	Isolate valves and valve systems
		4.2	Make safe for required work
		4.3	Check valves and valve systems are ready to be returned to service
		4.4	De-isolate and prepare valves and valve systems for return to service

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

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.

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Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- vibration/resonance
- blockages/hydrates
- valve seat wear

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- valve seal leakage
- valve stem leakage
- mechanical failure (e.g. plug/gate)
- valve sticking

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Valves

Valves include one or more of the following:

- globe, butterfly, ball and gate valves
- control valves
- isolation valves
- non-return or check valves
- pressure relief valves

Valve actuation includes one or more of the following:

- pneumatic
- hydraulic
- electrical

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- manual

Ancillary equipment

Ancillary equipment includes one or more of the following:

- shutdown systems
- hydraulic power units

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS223B Operate and monitor valve systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS223 Operate and monitor valve systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS223B Operate and monitor valve 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, and include the ability to:

- operate and adjust valves to meet job specifications
- undertake operational maintenance according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- valve equipment operating parameters, such as pressures, temperatures and flows
- flow volume calculations
- flow velocity calculations
- relevant process material properties such as fluid corrosive properties, fluid erosive properties
- principles of operation of valves
- physics and chemistry relevant to the valves and the materials processed
- routine problems, faults and their resolution
- relevant alarms and actions
- correct methods of operating and controlling valves
- types and causes of problems within operator's scope of skill level and responsibility
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate industrial valves applicable to this unit
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS224 Provide fluids for utilities and support

Modification History

Release 1. Supersedes and is equivalent to PMAOPS224B Provide fluids for utilities and support

Application

This unit of competency covers the skills and knowledge required to provide essential fluids for process support.

It applies to the generation, provision or 'making' of services for use by a plant. While this generally would apply to a remote or off-shore plant, it may also be appropriate for other plants. These fluids may be used for instrumentation, cooling, stabilising, scrubbing and hazard reduction, fire suppression and other uses.

This unit of competency applies to operators who are required to operate, monitor and maintain the equipment using relevant procedures, and identify operational problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of plant item
2	**Monitor utility and support fluid equipment**	2.1	Determine the required levels of demand for support or utility fluids from a knowledge of the plant/site's process control systems or equipment
		2.2	Monitor process equipment and systems, such as compressors, pumps, receivers and distribution systems, to meet and maintain the facility utility service requirements
		2.3	Monitor and manually adjust flow or ensure correct operation of automatic control valves to control the flow of fluids into the plant/site's process systems and equipment
		2.4	Monitor quality of fluids and ensure that they remain within specifications, e.g. quality and consistency
		2.5	Complete routine checks, logs and paperwork taking action on unexpected readings
3	**Identify need for maintenance**	3.1	Monitor service records to assist with programmed maintenance scheduling
		3.2	Monitor equipment for evidence of maintenance needs

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			outside programmed maintenance
		3.3	Advise other site personnel of the need to take equipment off-line for maintenance action
		3.4	Identify back-up or auxiliary equipment (where provided) to facilitate maintenance of fluid supplies within the facility
		3.5	Ensure equipment can be safely taken off-line for maintenance
4	**Isolate and de-isolate equipment**	4.1	Complete any required pre-start checks, ensuring valves, inlets and outlets are in correct positions
		4.2	Start up/shut down/changeover equipment according to type and duty in liaison with other personnel
		4.3	Isolate plant
		4.4	Make safe for required work
		4.5	Check plant is ready to be returned to service
		4.6	De-isolate and prepare plant for return to service
5	**Respond to emergencies**	5.1	Identify critical out-of-specification performance of equipment and contact appropriate personnel
		5.2	Respond to an emergency situation according to procedures
		5.3	Shut down, under instruction, any equipment and associated equipment affected by the emergency situation
		5.4	Implement any back-up procedures to ensure the ongoing supply of critical fluids to the remainder of the facility
		5.5	Ensure all safety procedures are fully complied with

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- variation in fluid feed
- vibration or surging
- control of level, temperature, pressure and flow
- blockages or leakage

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant

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procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Utilities/fluid supply system

This unit of competency includes all such items of equipment and unit operations which form part of the utilities/fluids supply system. Depending on the plant this will include one or more of the following:

- plant/site/camp water equipment
- high and low pressure steam equipment
- flushing oil systems
- cryogenic plants
- refrigerant systems
- filtration equipment
- purge systems

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS224B Provide fluids for utilities and support

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Links

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Assessment Requirements for PMAOPS224 Provide fluids for utilities and support

Modification History

Release 1. Supersedes and is equivalent to PMAOPS224B Provide fluids for utilities and support

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 include the ability to:

- start up and shut down fluid supply system
- monitor and operate equipment to meet specifications and demand
- identify need for maintenance and prepare equipment for maintenance
- identify critical issues and apply emergency procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- distinguish between causes of problems/alarm/fault indications, including:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - product parameters (temperature, flows, pressure and levels).

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and the function of each
- principles of equipment operation
- physics and chemistry relevant to the utility and its use
- emergency back-up systems
- process control systems and instrumentation
- the differences between high pressure and low pressure systems
- process parameters and limits, e.g. temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- correct methods of starting, stopping, operating and controlling process

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- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS226 Monitor and operate flare systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS226A Monitor and operate flare systems

Application

This unit of competency covers the skills and knowledge required to monitor and operate flare systems.

The flare system may be an elevated flare, ground flare or vent (sometimes called ‘cold flare’). The flare system includes all items from the safety relief device through to the flare inclusive.

This unit of competency applies to operators who, as part of their duties, are required to monitor flare systems, start up and shut down according to procedures, identify problems with flare systems and take appropriate action.

This unit of competency applies to an individual who may work alone although under the routine direction and supervision of a person who is competent to undertake the complete operation of the plant/plant area. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Monitor flare system**	1.1	Identify and control flare system hazards
		1.2	Visually inspect the flare and flare system components for compliance to requirements
		1.3	Take relevant readings
		1.4	Check for process causes of identified problems
		1.5	Check for other causes of identified problems
		1.6	Take actions specified in the procedures
		1.7	Complete logs as required
2	**Shut down flare system**	2.1	Obtain required authorisations for a flare shutdown
		2.2	Notify other relevant plants/units of planned shutdown
		2.3	Identify and control flare shutdown hazards
		2.4	Purge and isolate flare system
		2.5	Complete other preparations for flare shutdown according to procedures
		2.6	Shut down according to procedures
3	**Start up flare system**	3.1	Check all required work has been completed
		3.2	Check integrity of components
		3.3	Notify other relevant plants/units of planned start-up
		3.4	Identify and control flare start-up hazards
		3.5	De-isolate and purge flare system
		3.6	Complete other preparations for flare start-up according to procedures
		3.7	Start up flare system according to procedures

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4	**Solve flare system problems**	4.1	Recognise and respond to abnormal conditions
		4.2	Identify other problems in flare system
		4.3	Take action to remedy flare problems in accordance with procedures
		4.4	Communicate relevant information
		4.5	Complete required documentation

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

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- iced lines
- high levels in pots/vessels
- smoke from flare
- flame out
- lack of header purge flow
- flash back
- inconsistent header composition
- blockage
- cold feed to warm header

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Abnormal conditions

Abnormal conditions include one or more of the following:

- weather

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- loss of pilot fuel
- loss of utilities
- flame out
- high flare system back pressure
- cross connection between dissimilar systems

Responding to abnormal conditions

Responding to abnormal conditions includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to resolve to designated person

Flare system

The flare system includes one or more of the following:

- elevated flare
- ground flare
- vents (sometimes called ‘cold flare’)

The flare system includes all items from the safety relief device through to the flare inclusive.

Hazards

Hazards include one or more of the following:

- access and exclusion zone
- heat
- blow backs
- leaks/loss of containment (LOC)
- ineffective isolations
- inadequate ventilation
- air ingress
- liquid carryover
- high liquid levels in knock out pots/separation vessels
- contraction and expansion (cold vapours)
- dislodgement of burning coke
- noise
- cryogenic temperatures

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- radiation
- liquid hammer

Visual inspection

As relevant to the type of flare, visual inspection includes one or more of the following:

- pilot flame condition
- burn pattern
- ice on header lines
- vessel levels
- damage or deterioration
- smoke density

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic based
- verbal/radio reports
- reporting items found which require action

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS226A Monitor and operate flare systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS226 Monitor and operate flare systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS226A Monitor and operate flare 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, and include the ability to:

- monitor and inspect flare systems
- shut down/start up flare systems according to procedures
- recognise conditions which indicate a problem and take appropriate action
- convey information relevant to the operation clearly and effectively.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls
- flare system operating principles, requirements and parameters
- routine problems, faults and their symptoms and the corrective action to be taken
- knock on/escalation potential
- process materials likely to be flared and the conditions which will lead to flaring
- relevant environmental requirements
- significance of the exclusion zone

flare start-up, re-ignition and shutdown procedures.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on the job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS230 Monitor, operate and maintain pipeline stations and equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS230B Monitor, operate and maintain pipeline stations and equipment

Application

This unit of competency covers the skills and knowledge required to operate and maintain pipeline stations and equipment where the pipeline is covered by the *AS 2885 Pipelines - Gas and liquid petroleum* suite of standards. *AS 2885 Pipelines - Gas and liquid petroleum* (and its related standards) should be consulted for detail.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor its performance and the need for maintenance, identify problems and take appropriate action, and maintain records.

The unit of competency applies to pipeline stations, such as:

maintenance bases

compressor stations

scraper stations

inlet and delivery stations

mainline block valve sites.

This unit of competency applies to an individual who may work alone although under the routine direction and supervision of a person who is competent to undertake the complete operation of the plant/plant area. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel but may be applied to a pipeline control centre.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on pipeline
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of pipeline and its components
2	**Plan and organise for activities**	2.1	Obtain tools, equipment and testing devices needed to carry out the work and check for correct operation and safety
		2.2	Check operational area to ensure that hazards are controlled
		2.3	Conduct required safety checks and pre-start checks of the equipment
		2.4	Determine status of the system through communication with relevant personnel prior to commencing start-up
3	**Start up/shut**	3.1	Start up the system in accordance with procedures

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	down the system	3.2	Shut down in accordance with procedures and conditions
		3.3	Apply emergency shutdown procedures when appropriate
		3.4	Maintain records/reports to procedures
4	**Monitor the system**	4.1	Monitor operating conditions of equipment through condition monitoring systems, gauge levels, temperatures and flow indicators in order to determine performance of equipment and system
		4.2	Adjust systems for the most efficient operation
		4.3	Identify equipment faults through inspection and testing of the operational equipment
		4.4	Take appropriate action
		4.5	Communicate pipeline system information to relevant personnel
		4.6	Select and apply emergency response when required
5	**Isolate and de-isolate pipeline or components**	5.1	Isolate pipeline and components
		5.2	Make safe for required work
		5.3	Check pipeline/component is ready to be returned to service
		5.4	De-isolate pipeline/component
		5.5	Prepare plant for return to service
6	**Record and report results**	6.1	Document and record maintenance results to procedures
		6.2	Notify work completion to procedures
		6.3	Cancel where appropriate permit to work and sign-off at completion of repair

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, smoke, dusts, vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- gas/product leaks
- incorrect valve positions
- electrical problems
- compressor or pump failure
- out of current inspection status
- gauge failure or hose rupture, leaks
- instruments out of calibration
- instruments and equipment requiring cleaning

Known solutions are drawn from one or more of the following:

- procedures

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- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Appropriate action

Appropriate action includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the pipeline

Pipeline station and equipment

This unit of competency includes all items of equipment and unit operations which form part of the pipeline system, including, as relevant to a particular pipeline, one or more of the following:

- compressor systems and equipment, including monitoring systems, anti surge systems, safety systems and compressor control systems
- prime movers, including turbine engines, reciprocating engines and electric motors
- instrument and control systems
- valve systems

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS230B Monitor, operate and maintain pipeline stations and equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS230 Monitor, operate and maintain pipeline stations and equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS230B Monitor, operate and maintain pipeline stations and equipment

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 include the ability to:
- apply pre-start, start-up and shutdown procedures
- use instrumentation and inspections to monitor operating conditions and test results
- operate equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment

identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- station instrumentation, condition monitoring and metering equipment
- principles of operation and purpose of gas analysis equipment, valves, actuators and flanges, vessels/filtration equipment and power supplies
- process parameters and limits, such as temperature and pressure, relevant alarms and actions
- layout of piping systems, sumps and drains
- routine problems, faults and their resolution
- plant process idiosyncrasies
- all items on a schematic of the plant item and the function of each
- correct methods of starting, stopping, operating and controlling process
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on the job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS231 Control gas odourisation

Modification History

Release 1. Supersedes and is equivalent to PMAOPS231B Control gas odourisation

Application

This unit of competency covers the skills and knowledge required to control gas odourisation and related processes.

This unit of competency applies to operators who are required to store and handle odourants, monitor the daily inventory of the odourising agent, monitor and operate the injection pumps, identify and rectify operational problems, and respond to abnormal situations.

The operator will be familiar with the physical and chemical properties of the product and understand all the safety issues set down in the safety data sheet (SDS) associated with this chemical.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements

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		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on gas odourising plant
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of gas odourising plant
2	**Start up and shut down gas odourising plant in accordance with procedures**	2.1	Complete pre-start checks
		2.2	Start up odourant injection plant
		2.3	Shut down odourant injection plant
		2.4	Respond to plant trip/emergency shutdown
3	**Control odourisation in accordance with legislative/ regulatory requirements**	3.1	Maintain specified odourant concentration in the gas
		3.2	Store odourant
		3.3	Handle or transport odourant
		3.4	Handle waste products in accordance with legislative requirements
		3.5	Complete reports, records and logs
		3.6	Monitor odourisation and take action in accordance with procedures
4	**Isolate and de-isolate plant**	4.1	Isolate plant.
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant for return to service

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant
-

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- suction vapour locks
- diaphragm ruptures
- low suction pressure
- flow regulator failures
- gas leaks and fires
- equipment failures

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

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Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Operational equipment

Operational equipment includes the following:

- emergency response kit including absorption material
- neutralising agents
- storage level indicator (magnetic detector)
- personal protective equipment (PPE)
- molecular sieve for venting
- pumps and flow control equipment

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS231B Control gas odourisation

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS231 Control gas odourisation

Modification History

Release 1. Supersedes and is equivalent to PMAOPS231B Control gas odourisation

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 include the ability to:

- start up, monitor and adjust injection pumps to maintain odour to specifications
- store, handle, transfer and dispose of odourant waste in accordance with regulatory requirements and safety data sheets (SDS)
- apply shutdown and emergency procedures
- recognise and take specified action on early warning signs of equipment/processes needing attention or with potential problems
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- distinguish between causes of problems/alarm/fault indications, including:
  - process gas variations
  - instrument failure/wrong readings
  - electrical failures
  - mechanical failures
  - operational problems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- gas odourisation systems and their component functions
- principles of operation of plant/equipment
- physics and chemistry relevant to the process unit and the materials processed
- nature/condition of materials entering and leaving each stage of the process
- process parameters and limits, e.g. temperature, pressure and flow
- routine problems, faults, their symptoms and resolution
- correct methods of starting, stopping, operating and controlling process
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS232 Operate filtration equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS232B Produce product by filtration

Application

This unit of competency covers the skills and knowledge required to operate stand-alone dual phase (solid/fluid) separation equipment as used in a chemical, oil/hydrocarbons, metalliferous minerals processing or other plant.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor and adjust process parameters, and identify operational problems and take appropriate action.

In a typical scenario, a product is filtered to remove a particulate solid (precipitate/cake) from the liquid (filtrate). The filtrate or the precipitate may be the product. The operations technician will monitor pressure differentials through filtration equipment and may check temperature gradients, product flows and levels in order to confirm the correct working status of all the equipment under control. Filter vessels and internals vary depending on process requirements.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on filter
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of filter
2	**Operate filter**	2.1	Identify the types of filter and its duty
		2.2	Complete routine checks, logs and paperwork taking action in accordance with procedures on unexpected readings
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor filter frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate filter**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover filter according to the filter type and duty in liaison with other personnel

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4.3 Isolate filter

4.4 Make safe for required work

4.5 Check filter is ready to be returned to service

4.6 De-isolate and prepare filter for return to service

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

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,

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and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- control pressure
- effects on upstream and downstream plant
- clogging
- seal/gasket leaks
- pressure loss/low flow

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- cartridge/filter change
- blockages/build-up/fouling
- erosion/wear

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action on abnormal situations

Action on abnormal situations includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Filtration equipment

Filtration equipment includes the following:

- filters and membranes, such as plate and frame filters, leaf filters, cartridge filters, bed (sand/gravel) filters and disk/edge filters
- pressure/flow monitoring equipment
- minor equipment to supply filter and remove filtrate/cake which is integral to the operation of the filter

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on

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the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS232B Produce product by filtration

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS232 Operate filtration equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS232B Produce product by filtration

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 include the ability to:

- monitor and adjust process systems and filtration equipment to meet specifications
- determine the impact of differential pressure changes and adjust process variables accordingly
- recognise early warning signs of equipment/processes needing attention or with potential problems
- start up, shut down and changeover filters
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- distinguish between causes of problems/alarm/fault indications, including:
  - process variations
  - instrument failure/wrong reading
  - electrical failure
  - mechanical failure.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the filter system and the function of each
- principles of the filtration process
- filter cake properties where appropriate
- systems operating parameters
- function and troubleshooting of major internal components and their problems, such as cartridges, baskets, supports, nozzles and grids
- typical problems with separation equipment and their remedy
- physics and chemistry relevant to the process unit and the materials involved
- process parameters and limits, e.g. pressure and flow
- causes of head loss in filtration systems, including cakes and cake compressibility
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes

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- potential consequences
- appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS233 Monitor wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS233A Monitor wells and gathering systems

Application

This unit of competency covers the skills and knowledge required to monitor wells and associated equipment in the field.

This unit of competency applies to field operators who are required to take readings; undertake inspections; recognise, record and report problems; and identify and control hazards. The field operator is not required to rectify problems or make adjustments as part of this competency.

This unit of competency applies to field operators who are responsible for a number of wells and their associated systems. In a typical scenario, the operator will be driving alone, on and off roads between wells and also to and from the base site or plant. While at a site, they will be monitoring well and equipment performance by taking readings, making checks, and recording and reporting their findings in accordance with procedures. They will also be expected to identify hazards and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on wells/gathering systems
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of wells/gathering systems
		1.8	Determine appropriate route/schedule for day's work
2	**Complete site equipment checks**	2.1	Check equipment condition and operation
		2.2	Check required levels
		2.3	Top up levels as required
		2.4	Complete logs and reports as required
3	**Use well control systems as required**	3.1	Check well control systems validity
		3.2	Perform other required well control system tasks
		3.3	Complete logs and reports as required
4	**Take required readings**	4.1	Complete all required readings for site
		4.2	Compare all read values with the desired range
		4.3	Compare read values with previous log sheet values

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		4.4	Complete logs and reports as required
5	**Complete required lease maintenance**	5.1	Inspect lease area for items requiring action
		5.2	Complete required lease maintenance actions
		5.3	Complete logs and reports as required
6	**Finalise shift activities**	6.1	Complete shift tasks as appropriate
		6.2	Ensure identified faults are correctly logged/reported for action
		6.3	Ensure incomplete tasks are scheduled for follow-up
		6.4	Ensure all logs and reports are complete and understood

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks

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- extreme weather
- other hazards that might arise

Routine problems Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- leakage
- solids (formation fines)
- vibration
- loss of control of pressure and/or flow
- hydrate formation and blockages
- liquid slugging
- corrosion
- erosion
- sulphate reducing bacteria
- scale formation
- equipment failure

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Site Site includes one or more of the following:

- a well
- a nominated area in the gathering system
- another location where the operator is required to work

Site equipment Site equipment includes one or more of the following:

- wellheads
- choke and control valves
- meters
- flow lines
- high point vents

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- low point drains
- valves, including non-return and pressure/vacuum relief
- pumps, pump speed and their prime movers
- product separation units
- instrumentation and control systems (variable speed drive (VSD) and proportional integral derivative (PID))
- testing equipment
- power units
- drive heads
- flares
- chemical injection equipment
- storage tanks/vessels
- autodumps
- leaks

Levels

Levels include, as appropriate to the site, one or more of the following:

- chemical storage levels
- lubricating oil levels
- water and gas levels
- battery levels
- drain levels

Lease maintenance areas requiring checking

Lease maintenance areas requiring checking include one or more of the following:

- land erosion
- fence and gate integrity
- weeds and other growth
- actions of feral or other fauna
- other required items

Identified faults

Identified faults include one or more of the following:

- instrumentation failure/malfunction
- electrical failure/malfunction
- mechanical failure/malfunction
- control system failure/malfunction
- mismatch between flow rates and system requirements
- wear, tear and corrosion of plant and equipment

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS233A Monitor wells and gathering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS233 Monitor wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS233A Monitor wells and gathering 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, and include the ability to:

- undertake checks, inspections and readings according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- convey information relevant to the operation clearly and effectively
- identify hazards and apply hazard control procedures
- complete workplace forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- geology relevant to the wells (e.g. coal seam gas (CSG) formation, structure and completions, and coal type and structure)
- well design and construction
- physics and chemistry relevant to the unit and the processes used
- hydrate formation
- free flow and pumped wells
- pumping principles
- gas flow principles
- gas/water separation principles
- draining and venting requirements
- routine problems, faults and typical causes
- process parameters and limits (e.g. temperature, pressure and flow)
- static electricity and earthing
- relevant environmental and heritage requirements
- protective systems
- remote terminal unit, functions, operation and problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes

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- potential consequences
- appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Co-assessment with the following unit should be considered:
  - PMASUP236 Operate vehicles in the field
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of monitoring and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - demonstration of skills
  - industrybased 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.

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- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS234 Monitor and operate low pressure compressors

Modification History

Release 1. Supersedes and is equivalent to PMAOPS234A Monitor and operate low pressure compressors

Application

This unit of competency covers the skills and knowledge required to operate low pressure compressors.

The compressor may be technically sophisticated and/or have sophisticated controls built in, but its operation is relatively simple. It may have essential ancillary equipment but the operation of this ancillary equipment is largely integrated with the normal operation of the compressor unit itself.

The compressors will typically be used to provide suction or a moderately low pressure only. One example is the operation of a low pressure, low volume screw compressor in a coal seam gas (CSG) gathering system.

This unit of competency applies to operators who are required to start up and shut down the equipment, complete routine checks, monitor its performance and make adjustments, identify problems and take appropriate action, and maintain records.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on compressor and ancillary equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of compressor and ancillary equipment
2	**Operate compressor in accordance with procedures**	2.1	Identify type of compressor and its duty
		2.2	Complete routine checks, reads and logs
		2.3	Make adjustments required
		2.4	Identify problems and take action
		2.5	Complete logs and reports
3	**Recognise and take appropriate action on abnormal situations**	3.1	Monitor compressor frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate compressor**	4.1	Complete any required pre-start checks
		4.2	Start up and shut down compressor according to compressor type and duty in liaison with other personnel
		4.3	Isolate compressor
		4.4	Make safe as required
		4.5	Check compressor and ancillary equipment are ready to be returned to service
		4.6	De-isolate and prepare plant for return to service

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

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

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Routine problems are predictable and include one or more of the following:

- leakage
- vibration
- loss of control of pressure and/or flow
- blockages
- equipment failure
- lack of water removal from gas
- high differential pressure on lube oil filters

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Routine check reads and logs

Routine check reads and logs include, as appropriate to the plant, one or more of the following:

- lubricating oil levels
- temperatures (inlet and outlet)
- pressures (inlet and outlet)
- speed

Identified faults

Identified faults include one or more of the following:

- instrumentation failure/malfunction
- electrical failure/malfunction
- mechanical failure/malfunction
- control system failure/malfunction
- mismatch between flow rates and system requirements
- wear, tear and corrosion of plant and equipment

Action on abnormal situations

Action on abnormal situations includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility

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- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

In this unit problem solving is restricted to routine problems only.

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS234A Monitor and operate low pressure compressors

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS234 Monitor and operate low pressure compressors

Modification History

Release 1. Supersedes and is equivalent to PMAOPS234A Monitor and operate low pressure compressors

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 include the ability to:

- undertake checks, reads and logs according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- take action to ensure a timely return to full performance
- convey information relevant to the operation clearly and effectively
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- compressor/pumping principles
- physics relevant to the processes used, and gas flow principles
- typical issues causing problems
- process parameters and limits (e.g. temperature, pressure and flow)
- relevant alarms and actions
- protective systems
- control systems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS236 Monitor continuous process plant

Modification History

Release 1. New unit

Application

This unit of competency covers the skills and knowledge required to monitor continuous process plant as part of an operational team.

The operator will be required to identify requirements for the shift, monitor a plant/plant area, log and interpret readings and observations, take specified actions under identified circumstances, and complete documentation.

This unit of competency applies to an individual who may work alone although under the routine direction and supervision of a person who is competent to undertake the complete operation of the plant/plant area. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements

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		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of plant and equipment in work area
2	**Monitor plant in work area**	2.1	Identify the type and duty of plant item
		2.2	Complete routine checks
		2.3	Monitor plant item and plant area frequently and critically throughout shift using measured/indicated data and senses as appropriate
		2.4	Complete logs and paperwork
		2.5	Identify impacts on the plant of any changes upstream and downstream of the plant
		2.6	Identify upstream and downstream impacts of any changes on the plant
3	**Take action in accordance with procedures**	3.1	Communicate observations
		3.2	Recognise situations which may require action
		3.3	Make required adjustments to plant/process appropriate to the type of plant and its duty
		3.4	Resolve routine problems
		3.5	Take appropriate actions on other abnormal situations to make safe and have the situation resolved

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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

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:

- organisation procedures relevant to data systems, data security, record keeping, privacy, internet usage and intellectual property (IP)
- manufacturers' manuals
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the organisation

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Identifying hazards

Hazards include one or more of the following:

- plant services (steam, condensate and cooling water)
- slip/trip hazards
- PPE is unavailable and/or not functional
- electricity
- gas
- gases and liquids under pressure
- unsafe equipment and hazard controls not functional
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- readings being out of range
- unusual observation on plant
- change in weather
- process upset

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to relevant procedures.

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Unit Mapping Information

Release 1. New unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS236 Monitor continuous process plant

Modification History

Release 1. New unit

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:

- give and receive an appropriate shift handover each shift
- complete checks and logs at the frequency required for the plant
- monitor the plant and process in the work area
- communicate plant/process information when required
- respond in a timely fashion to the changing needs of the plant/plant area.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- hazards and hazard controls specific to the plant and work area
- principles of operation of plant items within the work area:
  - science (physics/chemistry/biology) relevant to plant/ process
  - function of plant major components
  - types and duties of plant
  - process parameters and limits (e.g. temperature, pressure, flow and pH)
  - effects of variations in process conditions and materials
- relevant alarms and actions
- types and causes of known problems for the plant area and its components
- corrective action appropriate to the identified problem cause.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must use an appropriate industrial item of equipment requiring demonstration of monitoring and responding to problems
  - may use industry-based simulation for **part only** of the unit (typically problem solving) where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - demonstration of skills
  - industry-based case studies/scenarios and/or ‘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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition the assessor or anyone acting in subject matter expert role in assessment shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/ evaluating the type of work being assessed under routine and non-routine conditions

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- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS240 Store fluids in bulk

Modification History

Release 1. Supersedes and is equivalent to PMAOPS240B Store fluids in bulk

Application

This unit of competency covers the skills and knowledge required to store and transfer fluids to and from tanks. This is often called ‘operating a tank farm’.

Fluids are any materials which flow. They include materials which:

- are normally a liquid at ambient conditions
- are normally a gas at ambient conditions
- have been liquefied
- have been vapourised
- have been melted.

This unit of competency applies to plant technicians who are required to:

- identify the material and interpret any special handling or storage requirements, including dangerous or hazardous goods requirements, from the available information
- ensure that the destination for the liquid is appropriately prepared, has enough capacity and is correctly piped
- check that the liquids are being stored safely in tanks and that safety equipment and services are monitored
- transfer liquids
- respond to abnormal situations.

In a typical scenario the plant technician will manage a series of liquid storage vessels for raw materials, intermediate product and/or finished product. The plant technician will arrange for the unloading/loading of tanker trucks, and transfer of fluids between storage vessels and/or the process.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on tank farm items
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of tank farm items
2	**Prepare storage/loading facilities**	2.1	Ensure that products are being stored in the tank area to procedures
		2.2	Inspect storage and transfer facilities for leaks or damage and take any action specified in procedures
		2.3	Check and test safety equipment and systems to verify their operational condition and status, and report all equipment faults in accordance with procedures
		2.4	Confirm quantities and specifications of stored fluids in each tank

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3	**Transfer fluids to and from tanks**	3.1	Confirm tank capacities and identification and quality of current contents, and determine if these are being maintained within the agreed product requirements prior to transfer
		3.2	Check all valves are correctly lined up
		3.3	Ensure all areas involved in the transfer are safe to allow transfer of fluids to occur
		3.4	Inspect all transfer equipment before transfer, including lines, hoses, pumps, fittings, instruments and controls
		3.5	Confirm that transfer destination has sufficient capacity for the transfer and take any action specified in procedures
		3.6	Transfer liquids safely in accordance with procedures
		3.7	Conduct cleaning, purging or draining after transfer is complete in accordance with procedures
		3.8	Record transfer in accordance with procedures
4	**Isolate and de-isolate plant**	4.1	Isolate tank farm plant items
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant item for return to service

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse

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- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dust or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- interruptions to loading through adverse weather conditions
- selection of appropriate storage facility
- control of temperature and pressure
- variations in feed
- vibration
- tank capacities and space

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Equipment

This unit of competency includes all such items of equipment and unit operations, which form part of the storage and loading system, including as appropriate to the facility, one or more of the following:

- tanks
- vessels

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- pumps
- compressors
- road or rail tanker loading facilities
- gauges
- fire protection and deluge systems
- inert gas blanketing or purging systems (e.g. nitrogen)
- gas detection systems and equipment
- tank dipping and measurement equipment

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold, empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS240B Store fluids in bulk

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS240 Store fluids in bulk

Modification History

Release 1. Supersedes and is equivalent to PMAOPS240B Store fluids in bulk

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 include the ability to:

- determine and apply any special handling or storage requirements, including dangerous or hazardous goods requirements
- undertake checks, inspections and tests to confirm processes and equipment conform to safety requirements and job specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- complete workplace forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the tank farm and the functions of each
- storage and transfer techniques required for the materials being handled
- tank capacities, percentages and product mixes
- flow rates and measures
- static electricity principles
- principles of operation of plant/equipment
- science (e.g. physics, chemistry, biochemistry) relevant to the plant items and materials being handled
- process parameters and limits (e.g. temperature, pressure, flow and pH)
- relevant alarms and actions
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS241 Operate Joule-Thomson effect device

Modification History

Release 1. Supersedes and is equivalent to PMAOPS241A Operate Joule-Thomson effect device

Application

This unit of competency covers the skills and knowledge required to operate a range of equipment generally covered by the title 'Joule-Thomson device'.

This unit of competency covers all Joule-Thomson type devices, such as turbo expanders, expansion turbines and expansion engines. These devices are typically encountered in any cryogenic process and are a critical part of the 'cold end' or refrigeration cycle.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor its performance, identify operational problems and take appropriate action, and maintain records. Generally any adjustment to the Joule-Thomson device will be made remotely by the control panel operator.

In a typical scenario, an operator monitors and operates a cryogenic plant which liquefies hydrocarbons, air or other gas. The purpose of the liquefaction may be to then separate the components by distillation or other means, or there may be other reasons for liquefying the gas (e.g. to reduce volume for shipping). The gas being liquefied may also be the refrigerant fluid used for at least part of the cooling/liquefaction cycle. This may be undertaken in conjunction with other refrigeration and/or cooling processes.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

The operator will typically operate the entire cooling and liquefaction operation and so will also be operating a compressor, a heat exchanger and a dryer.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on Joule-Thomson system
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of Joule-Thomson system
2	**Monitor and operate Joule-Thomson device**	2.1	Monitor Joule-Thomson system frequently and critically throughout shift using measured/indicated data and senses as appropriate
		2.2	Identify impacts of any changes upstream and downstream
		2.3	Recognise situations which may require action
		2.4	Resolve routine problems
		2.5	Take actions on other abnormal situations to make safe and have the situation resolved

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3	**Isolate and de-isolate Joule-Thomson system**	3.1	Complete any required pre-start checks
		3.2	Start up/shut down/changeover Joule-Thomson device according to the Joule-Thomson device type and duty in liaison with other personnel
		3.3	Isolate Joule-Thomson system
		3.4	Make safe for required work
		3.5	Check Joule-Thomson system is ready to be returned to service
		3.6	De-isolate and prepare Joule-Thomson system for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- process hazards
- cryogenic materials and hazards
- cold embrittlement
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks

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- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- pressure differential (DP) out of range
- feed/product too warm
- feed/product pressure out of range
- liquid forming in wrong part of system
- lubrication system too hot/cold wrong pressure
- leaking seals/seal gas flow/pressure wrong
- high thrust forces
- excessive vibration

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Joule-Thomson device

A Joule-Thomson device is any device which requires a gas/vapour to do work, typically by expanding so cooling the vapour (i.e. uses the Joule-Thomson effect). While the vapour will not usually condense in the Joule-Thomson device it will often condense immediately on leaving the device. Some devices may be constructed to allow for condensation to occur within the device, this is sometimes also called the Joule-Kelvin effect.

Monitor

Product produced will be monitored for the following:

- value of critical variables
- state (liquid/vapour)
- production rate (e.g. volume or mass flow rate)
- other properties as defined in job specifications/procedures

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Critical variables to be monitored include one or more of the following:

- temperature
- pressure
- pressure drops
- purity/contaminants
- inlet guide vane (IGV) blade angles (where appropriate to the device)
- speed of rotation (where appropriate to the device)
- other variables (where appropriate to the device)

Joule-Thomson system

The Joule-Thomson system includes the Joule-Thomson device itself and one or more of the following:

- lubricating oil
- dry gas seals
- other seals
- safety and shutdown systems

Action on abnormal situations

Action on abnormal situations includes the following:

- recognising actual and potential problems
- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold and empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS241A Operate Joule-Thomson effect device

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS241 Operate Joule-Thomson effect device

Modification History

Release 1. Supersedes and is equivalent to PMAOPS241A Operate Joule-Thomson effect device

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 include the ability to:

- start up/shut down the Joule-Thomson system
- monitor the system
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- cryogenic hazards associated with the process and the materials, including metal embrittlement
- cryogenic materials, their lines and vessels
- Joule-Thomson principles
- physics relevant to Joule-Thomson system, including Boyles and Charles laws, adiabatic/constant enthalpy expansion, inversion temperature and product dew point (i.e. dew point of the hydrocarbon, air or other gas being condensed)
- importance of the temperature range, (lack of) moisture (and other contaminants) in the process stream, and other critical variables
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMAOPS242 Moor ships for transfer of bulk processed particulates or fluids

Modification History

Release 1. Supersedes and is equivalent to PMAOPS242A Moor ships for transfer of bulk processed particulates or fluids

Application

This unit of competency covers the skills and knowledge required to moor ships that are transporting bulk fluids or particulates.

This unit of competency applies to the berthing of vessels transporting liquefied natural gas (LNG), liquefied petroleum gas (LPG), other bulk fluids and bulk processed particulates, such as iron ore or alumina. It applies to land-based moorings, floating storage and offtake (FSO)/floating production storage and offtake (FPSO) vessel/buoy or similar moorings.

This unit of competency applies to operators who are required to prepare the mooring area, identify and control hazards, follow instructions and procedures to position, secure and release vessel, and identify problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator and ‘shipping officer’ (or other suitably authorised operator), as appropriate.

These operators will liaise with port/jetty personnel as well as relevant ship personnel. When not involved with ship loading/unloading they may be expected to fulfil more traditional plant operations roles.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Identify work and compliance requirements
		1.2	Identify and control hazards
		1.3	Coordinate with appropriate personnel
		1.4	Check operational status of required plant/equipment
		1.5	Complete any required pre-berthing checks
2	**Deploy hazard and environmental controls in accordance with procedures**	2.1	Check required controls, including health, safety and environment (HSE) controls, are available and functional
		2.2	Deploy controls
		2.3	Prepare mooring area for operation
		2.4	Withdraw controls
3	**Berth ship in accordance with procedures**	3.1	Communicate with relevant personnel
		3.2	Receive and carry out instructions from shipping officer
		3.3	Throw/heave ships lines and secure vessel
		3.4	Guide ship to position required to receive/discharge
		3.5	Use capstan winch to ‘walk ship’ to required position
		3.6	Make fast to mooring (wharf, dolphin or buoy)
		3.7	Ensure all hazard controls are followed

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		3.8	Connect equipment required for transfer
		3.9	Set quick release hooks
4	**Release ship in accordance with procedures**	4.1	Communicate with relevant personnel
		4.2	Receive and carry out instructions from shipping officer
		4.3	Disconnect any connected equipment
		4.4	Release vessel
		4.5	Ensure all hazard controls are followed
5	**Recognise problems and take action**	5.1	Monitor mooring operation throughout the process
		5.2	Adjust process as required by procedures
		5.3	Take actions to resolve problems

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

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- Australian and other standards
- licence and certification requirements

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards Hazards include one or more of the following:

- working over/near water
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather

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- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- poor weather
- language issues with crew
- problems with ship's equipment

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to relevant procedures.

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying predictable problems using appropriate solution from procedures
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/scope of procedures to designated person

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS242A Moor ships for transfer of bulk processed particulates or fluids

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS242 Moor ships for transfer of bulk processed particulates or fluids

Modification History

Release 1. Supersedes and is equivalent to PMAOPS242A Moor ships for transfer of bulk processed particulates or fluids

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 include the ability to:

- operate mooring equipment to achieve smooth berthing and release of vessel and correct positioning to receive/discharge product
- recognise conditions which will lead to out-of-range conditions
- convey information relevant to the operation clearly and effectively
- read and interpret workplace documents and technical information
- identify hazards and apply hazard control procedures
- apply health, safety and environment (HSE) controls
- communicate with team and supervisors.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of equipment associated with mooring operations
- principles of mooring
- desirable parameters and limits (e.g. location relative to loading/unloading equipment and speed of approach)
- potential equipment and site hazards
- procedures and relevant documentation
- isolation devices type and purpose
- emergency, fire suppression, fire alert and disaster procedures
- environmental incident management procedures
- hazard identification and risk assessment response procedures
- relevant work health and safety (WHS), environmental and heritage legislation and policies
- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities)
- typical issues causing problems and the resolution of those problems.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include undertaking at least one (1) mooring activity under supervision
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMAOPS246 Operate separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS246A Operate separation equipment

Application

This unit of competency covers the skills and knowledge needed to operate typical stand-alone dual phase separation equipment as used in a chemical, oil/hydrocarbons or metalliferous minerals processing plant, and solving problems with separation processes.

This unit of competency applies to operators who are required to start up and shut down separation operations in accordance with procedures, and monitor and make adjustments to the equipment.

This unit of competency includes all types of stand-alone separation equipment for gaseous, liquid and solids separation where the separation process is physical and the separator is not powered or motor driven. Separation equipment includes one or more of the following:

- cyclones
- hydrocyclones
- scrubbers
- knockout drums
- demisters/drift eliminators
- spiral separators.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on chemical separation equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of separation equipment
2	**Operate separation equipment in accordance with procedures**	2.1	Identify the type of separation equipment and its duty
		2.2	Adjust flow and pressure as appropriate to type of separation equipment and its duty
		2.3	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor separation equipment frequently and critically throughout shift using measured/indicated data and smell, sight, sound and feel as appropriate
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate separation equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover separation equipment according to the plant type and duty in liaison with other personnel
		4.3	Isolate separation equipment
		4.4	Make safe for required work
		4.5	Check separation equipment is ready to be returned to service
		4.6	De-isolate and prepare separation equipment for return to service

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

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Action

Action in accordance with procedures includes the following:

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- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- cartridge/filter change
- blockages/build-up/fouling
- erosion/wear

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant
- using the process control system in the control room

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS246A Operate separation equipment

Links

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Assessment Requirements for PMAOPS246 Operate separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS246A Operate separation equipment

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 include the ability to:

- start up and shut down separation equipment
- monitor and operate separation equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the separator system and functions of each
- principles of operation of separation equipment
- factors affecting efficient operation of the separation equipment
- correct methods of starting, stopping, operating and controlling the equipment
- physics of operation, including behaviour of solids, liquids and gases, effects of phase changes, and effects of temperature and pressure
- function and troubleshooting of major internal components, including contaminants, supports, nozzles and grids; and typical problems
- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their resolution
- relevant alarms and actions
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of separation equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS247 Operate powered separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS247A Operate powered separation equipment

Application

This unit of competency covers the skills and knowledge required to operate powered dual phase separation equipment as used in a chemical, oil/hydrocarbons or metalliferous minerals processing or other plant.

This unit of competency applies to operators who are required to start up and shut down the equipment, monitor and adjust process parameters, identify operational problems with separation processes and equipment, including the driver powering the separation equipment, and take appropriate action.

Powered separation equipment can be used for gaseous, liquid and solids separation duties and includes one or more of the following:

- centrifuges
- rotary dryers
- rotary vacuum filters
- flotation cells/columns
- thickeners/clarifiers.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on chemical separation equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of chemical separation equipment
2	**Operate powered separation equipment in accordance with procedures**	2.1	Identify the type of powered separation equipment and its duty
		2.2	Adjust flow and pressure as appropriate to type of separation equipment and its duty
		2.3	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
3	**Operate drivers of separation equipment**	3.1	Monitor critical variables, such as amps, temperature and vibration
		3.2	Keep critical variables in range
		3.3	Recognise trends/patterns which indicate a potential or actual problem with the driver
		3.4	Take action to ensure driver is returned to full performance in a timely manner

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4	**Recognise and take action on abnormal situations in accordance with procedures**	4.1	Monitor powered separation equipment frequently and critically throughout shift using measured/indicated data and smell, sight, sound and feel as appropriate
		4.2	Identify impacts of any changes upstream and downstream
		4.3	Recognise situations which may require action
		4.4	Resolve routine problems
		4.5	Take actions on other abnormal situations to make safe and have the situation resolved
5	**Isolate and de-isolate powered separation equipment**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down/changeover powered separation equipment according to the plant type and duty in liaison with other personnel
		5.3	Isolate powered separation equipment
		5.4	Make safe for required work
		5.5	Check powered separation equipment is ready to be returned to service
		5.6	De-isolate and prepare powered separation equipment for return to service

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.

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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

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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)

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- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- cartridge/filter change
- blockages/build-up/fouling
- erosion/wear
- separator driver problems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

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Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments to the equipment (e.g. flow and pressure)
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to powered separation equipment and surrounding areas

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS247A Operate powered separation equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS247 Operate powered separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS247A Operate powered separation equipment

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 include the ability to:

- start up and shut down powered separation equipment
- monitor and operate powered separation equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation of separation plant/equipment
- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- all items on a schematic of the separator system and functions of each
- physics and chemistry relevant to each unit and the processes used, including kinetic energy effects
- function and troubleshooting of major internal components and their problems, such as internals, supports, nozzles, grids, agitators or scrapers
- hierarchy of control
- hazards that may arise in the job/work environment, and:
- their possible causes
- potential consequences
- appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of separation equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS260 Conduct screening operations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS260A Conduct screening operations

Application

This unit of competency covers the skills and knowledge required to use screens to separate coarser from finer solids.

This unit of competency applies to a variety of screen types used in wet or dry screening operations in mineral processing, plastic manufacture and other industries.

This unit of competency applies to operators who are required to start up and shut down screening and ancillary equipment, complete routine checks, monitor its performance and make adjustments, and identify problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency covers screening/sizing operations as they occur with crushed/ground solid, pellets/nibs and other solid material being separated by size.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Plan and prepare for operations**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on screens
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of screens
		1.8	Check screen feed and discharge areas for obstructions and hazards
		1.9	Complete any required pre-start checks
2	**Operate screening plant in accordance with procedures**	2.1	Identify the type of screen and its duty
		2.2	Complete routine checks, logs and paperwork
		2.3	Monitor feed and discharge rates to ensure efficient and safe screen operation
		2.4	Take action required by procedures
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor screens frequently and critically throughout shift using measured/indicated data and senses as appropriate
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems

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		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate screening equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down screens according to the screen type and duty in liaison with other personnel
		4.3	Isolate screening equipmen
		4.4	Make safe for required work.
		4.5	Check screening equipment is ready to be returned to service
		4.6	De-isolate and prepare screening equipment for return to service

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

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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:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dust or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- feed or discharge blockages
- blinding
- screen/cloth blockages
- electro-static build-up
- over/under size contamination

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action on abnormal situations

Action on abnormal situations includes the following

- determining problems needing action
- determining possible fault causes
- rectifying predictable problems using appropriate solution from procedures
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/scope of procedures to designated person

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Screening equipment types

Screening equipment includes one or more of the following:

- moving screen
- static screen
- rotary screens

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- circle-throw/vibrating equipment
- high frequency vibrating equipment
- gyratory equipment

Work requirements

Work requirements come from briefings, handovers and work orders and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- geological data
- site survey data
- site layout and out of bounds areas
- worksite inspection requirements
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS260A Conduct screening operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS260 Conduct screening operations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS260A Conduct screening 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, and include the ability to:

- start up and shut down screening equipment
- monitor feed and discharge rates and make adjustments to ensure efficient and safe screen operation
- recognise conditions which will lead to out of specification operation
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types, application and principles of operation of screening equipment and components, including:
  - sinusoidal vibration or gyratory vibration
  - gravity
  - density of materials
  - electrostatic force
  - stratification
  - amplitude
  - acceleration
  - blinding
  - brushing
  - contamination
  - deck
  - frequency
- process parameters and limits, including bed density
- routine problems, including contamination, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- hierarchy of control

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- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS261 Operate bulk solids loading equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS261A Operate bulk solids loading equipment

Application

This unit of competency covers the skills and knowledge required to operate equipment used to convey and load bulk solids in sealed containments.

This unit of competency applies to an operator who is required to undertake pre-start checks, operate filling, loading and supplementary equipment to meet specifications, and undertake minor maintenance.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency has been written with minerals processing plants as the specific focus. However, it can also be applied with appropriate contextualisation to any plant in which raw product is produced for transporting for further processing, such as in the manufacture of plastics or other particulates.

This unit of competency does not apply to line conveyors as part of a ship loading system.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of bulk solids loading equipment
2	**Manage bulk material storage and operate load-out equipment**	2.1	Visually inspect storage facility and load-out equipment
		2.2	Determine levels of solids in storage using appropriate indicators
		2.3	Ensure storage discharge areas are free from obstructions
		2.4	Identify the types of load-out equipment and duty
		2.5	Operate load-out equipment in accordance with procedures
		2.6	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		2.7	Ensure containment is properly sealed according to procedures after load-out
		2.8	Move containment to transhipment area
3	**Recognise problems and**	3.1	Monitor plant frequently and critically throughout shift using measured/indicated data and senses

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	take appropriate action	3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate bulk solids loading equipment**	4.1	Complete any required prestart checks
		4.2	Start up/shut down bulk solids loading equipment, and its components according to the equipment type and duty in liaison with other personnel
		4.3	Isolate bulk solids loading equipment, and its components
		4.4	Make safe for required work
		4.5	Check bulk solids loading equipment, and its components is ready to be returned to service
		4.6	De-isolate and prepare equipment for return to service

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

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- electricity
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity

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- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- rat holing and bridging in silos/bins/hoppers
- routing issues
- equipment problems
- solids falling from equipment

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Actions on other abnormal situations

Actions on other abnormal situations include the following:

- determining problems needing action
- determining possible fault causes
- rectifying predictable problems using appropriate solution from procedures
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/scope to designated person

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

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Load-out equipment

Load-out equipment includes one or more of the following:

- hoppers, bins or silos
- conveyors
- chutes
- dust extraction equipment and bag houses
- automated bagging or filling equipment
- vibratory settling equipment
- roller conveyors
- motorised lifting equipment
- weighing equipment
- moisture/composition testing equipment

Solids containments

Solids containments include one or more of the following:

- bulk bags
- drums
- road tankers
- hopper cars
- containers
- sealed bins

Work requirements

Work requirements come from briefings, handovers and work orders, and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- site layout and out of bounds areas
- worksite inspection requirements
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS261A Operate bulk solids loading equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS261 Operate bulk solids loading equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS261A Operate bulk solids loading equipment

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 include the ability to:

- operate bulk solids loading equipment
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- types, application and principles of operation of load-out equipment
- process parameters and limits
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- hierarchy of control
- hazards that may arise in the job/work environment, and:
- their possible causes
- potential consequences

appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS262 Operate digestion equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS262A Operate digestion equipment

Application

This unit of competency covers the skills and knowledge needed to operate digestion equipment as used in a metalliferous minerals processing plant.

This unit of competency applies to any type of digestion equipment. Examples include:

- autoclave digesters
- tube digesters.

This unit of competency applies to an operator who is required to start up and shut down digestion equipment to procedures, make adjustments to flow rate, pressure and temperature, as appropriate to the type of digestion equipment, and identify problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on digestion equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of digestion equipment
2	**Operate digestion equipment in accordance with procedures**	2.1	Identify the type of digestion equipment and duty
		2.2	Adjust flow, temperature and pressure as appropriate to type of digestion equipment and duty
		2.3	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor digestion equipment frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate digestion equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover digestion equipment according to the plant type and duty in liaison with other personnel

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4.3 Isolate digestion equipment

4.4 Make safe for required work

4.5 Check digestion equipment is ready to be returned to service

4.6 De-isolate and prepare digestion equipment for return to service

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

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.

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks

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- pressure loss/low flow
- high pressure
- blockages/build-up/fouling
- erosion/wear
- driver problems
- temperature excursions (high or low)

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments to the equipment (e.g. flow and pressure)
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to digestion equipment and surrounding areas

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Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Work requirements

Work requirements come from briefings, handovers and work orders, and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS262A Operate digestion equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS262 Operate digestion equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS262A Operate digestion equipment

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 include the ability to:

- start up and shut down digestion equipment
- monitor and operate digestion equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- all items on a schematic of the digestion equipment and functions of each
- physics and chemistry relevant to equipment and the processes used
- function and troubleshooting of major internal components and their problems, such as internals, supports, pumps or agitators
- pressure relief systems, including valves and rupture discs
- containment systems
- interlocks
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of digestion equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS263 Operate leaching equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS263A Operate leaching equipment

Application

This unit of competency covers the skills and knowledge required to operate leaching equipment and ancillary equipment.

This unit of competency applies to a variety of leaching processes as used in a metalliferous processing plant. Examples include:

- acid
- alkaline
- bacterial leach
- dump (run of mine ore)
- heap (processed ore for leaching)
- in situ
- pressure.

This unit of competency applies to operators who are required to start up and shut down and operate the equipment, monitor its performance and make adjustments, and identify problems and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on leaching equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of leaching equipment
2	**Operate leaching equipment in accordance with procedures**	2.1	Identify the type of leaching equipment and duty
		2.2	Adjust feed rate and reagents as appropriate to type of leaching equipment and duty
		2.3	Complete routine checks, logs and paperwork, taking appropriate action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor leaching equipment and ancillary equipment frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate leaching equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover leaching equipment according to the plant type and duty in liaison with other personnel
		4.3	Isolate leaching equipment
		4.4	Make safe for required work
		4.5	Check leaching equipment is ready to be returned to service
		4.6	De-isolate and prepare leaching equipment for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- blockages/build-up/fouling
- erosion/wear
- ancillary equipment problems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Ancillary equipment

Ancillary equipment includes one or more of the following:

- agitators
- pumps
- spray nozzles/heads

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

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Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments to the equipment (e.g. flow and pressure)
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to leaching equipment and surrounding areas

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Work requirements

Work requirements come from briefings, handovers and work orders and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS263A Operate leaching equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS263 Operate leaching equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS263A Operate leaching equipment

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 include the ability to:

- start up and shut down leaching equipment
- monitor and operate leaching equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- process parameters and limits, including temperature, pressure, flow and pH
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- all items on a schematic of the leaching equipment and functions of each
- physics and chemistry relevant to leaching equipment and the processes used
- function and troubleshooting of major internal components and their problems, such as internals, supports, nozzles or agitators
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of leaching equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS264 Operate solvent extraction equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS264A Operate solvent extraction equipment

Application

This unit of competency covers the skills and knowledge required to operate solvent extraction equipment and ancillary equipment.

This unit of competency applies to a variety of solvent extraction processes as used in a metalliferous processing plant. Examples of solvent extraction equipment include:

- mixer/settlers
- organic treatment units.

This unit of competency applies to operators who are required to start up and shut down and operate solvent extraction equipment, monitor its performance and make adjustments, and identify problems with solvent extraction processes and equipment, including any ancillary equipment, and take action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on solvent extraction equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of solvent extraction equipment
2	**Operate solvent extraction equipment in accordance with procedures**	2.1	Identify the type of solvent extraction equipment and duty
		2.2	Adjust process variables as appropriate to type of solvent extraction equipment and duty
		2.3	Complete routine checks, logs and paperwork, taking appropriate action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor solvent extraction and ancillary equipment frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action
		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved

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4	**Isolate and de-isolate solvent extraction equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down /changeover solvent extraction equipment according to the plant type and duty in liaison with other personnel
		4.3	Isolate solvent extraction equipment
		4.4	Make safe for required work
		4.5	Check solvent extraction equipment is ready to be returned to service
		4.6	De-isolate and prepare solvent extraction equipment for return to service

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

All operations to which this unit applies are subject to stringent health,

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- process leaks
- variations in throughput or feed
- blockages/build-up/fouling
- erosion/wear
- driver problems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Ancillary equipment variables

Ancillary equipment variables include the following:

- temperature
- amps
- pressure
- vibration

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility

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- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments to the equipment
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to solvent extraction equipment and surrounding areas

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Work requirements

Work requirements come from briefings, handovers and work orders, and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS264A Operate solvent extraction equipment

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Links

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Assessment Requirements for PMAOPS264 Operate solvent extraction equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS264A Operate solvent extraction equipment

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 include the ability to:

- start up and shut down solvent extraction equipment
- monitor and operate solvent extraction equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- process parameters and limits
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- all items on a schematic of the solvent extraction equipment and functions of each
- physics and chemistry relevant to solvent extraction equipment and the processes used
- function and troubleshooting of major internal components and their problems, such as internals, supports, pumps or agitators
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of solvent extraction equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS265 Operate magnetic/electrical separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS265A Operate magnetic/electrical separation equipment

Application

This unit of competency covers the skills and knowledge required to operate magnetic/electrical separation equipment and related drivers as used in a chemical, oil/hydrocarbons or metalliferous minerals processing plant.

This unit of competency applies to the operation of a variety of magnetic/electrical separators which can be used for gaseous, liquid and solids separation duties and includes one or more of the following:

- low intensity magnetic separators
- high intensity magnetic separators
- wet drum magnetic separators
- cross belt magnets
- electrostatic separators.

This unit of competency applies to operators who are required to start up and shut down and operate magnetic/electrical separation equipment, monitor its performance and make adjustments to flow rate and pressure, and identify problems with separation processes and equipment, including the driver powering the separation equipment, and take appropriate action.

This unit of competency applies to an individual who may work alone although under routine direction and supervision. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on magnetic/electrical separation equipment
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of magnetic/electrical separation equipment
2	**Operate magnetic/electrical separation equipment in accordance with procedures**	2.1	Identify the type of magnetic/electrical separation equipment and duty
		2.2	Adjust process variables as appropriate to type of magnetic/electrical separation equipment and duty
		2.3	Complete routine checks, logs and paperwork, taking appropriate action on unexpected readings and trends
3	**Recognise and take action on abnormal situations in accordance with procedures**	3.1	Monitor magnetic/electrical separation equipment frequently and critically throughout shift using measured/indicated data and senses
		3.2	Identify impacts of any changes upstream and downstream
		3.3	Recognise situations which may require action

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		3.4	Resolve routine problems
		3.5	Take actions on other abnormal situations to make safe and have the situation resolved
4	**Isolate and de-isolate magnetic/electrical separation equipment**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down/changeover magnetic/electrical separation equipment according to the plant type and duty in liaison with other personnel
		4.3	Isolate magnetic/electrical separation equipment
		4.4	Make safe for required work
		4.5	Check magnetic/electrical separation equipment is ready to be returned to service
		4.6	De-isolate and prepare magnetic/electrical separation equipment for return to service

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

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- Australian and other standards
- licence and certification requirements

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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

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- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- cartridge/filter change
- blockages/build-up/fouling
- erosion/wear
- separator driver problems

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Action

Action in accordance with procedures includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

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Resolve routine problems

Resolving routine problems includes one or more of the following:

- making adjustments to the equipment
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to separation equipment and surrounding areas

Start up/shut down as required

Start up/shut down as required includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Work requirements

Work requirements come from briefings, handovers and work orders, and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS265A Operate magnetic/electrical separation equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS265 Operate magnetic/electrical separation equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS265A Operate magnetic/electrical separation equipment

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 include the ability to:

- start up and shut down magnetic/electrical separation equipment
- monitor and operate magnetic/electrical separation equipment to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- process parameters and limits
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- all items on a schematic of the magnetic/electrical separation equipment and the functions of each
- physics and chemistry relevant to magnetic/electrical separation equipment and the processes used, including kinetic energy effects
- function and troubleshooting of major internal components and their problems, such as internals, supports, belts, drums or scrapers
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of magnetic/electrical separation equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS280 Interpret process plant schematics

Modification History

Release 1. Supersedes and is equivalent to PMAOPS280B Interpret process plant schematics

Application

This unit of competency covers the skills and knowledge required to interpret process plant schematics for a range of operations uses.

This unit of competency applies to operators who are required to find specific information from a schematic, mark up a schematic for their own or someone else's use, and sketch a schematic using relevant symbols as part of an explanation to another person or as an aide memoir for themselves.

This unit of competency applies to a wide range of schematics and covers all general and common symbols. It also includes those specific to the plant which is the operator's area of responsibility and any conventions which are applied by the organisation.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Relate schematic to plant**	1.1	Match items on schematic with items in plant
		1.2	Determine relevant pipe and flange schedules

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		1.3	Identify sizes and types of minor equipment
		1.4	Locate relevant instrument tapping points and control points
		1.5	Identify direction of flow on schematic and in plant
2	**Identify points required to prepare plant**	2.1	Locate isolation and blanking points for any item of the relevant schematic
		2.2	Identify drain/vent/purge points for any item on the relevant schematic
		2.3	Identify trip system elements
		2.4	Use schematic to check/develop work lists
3	**Describe the process with a schematic**	3.1	Use a schematic as the basis of a description of the process
		3.2	Describe the process using a manual schematic
		3.3	Walk through process identifying all plant items in process order
		3.4	Identify key conditions/variables from a relevant schematic

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.

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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

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.

Items

Items on schematic/in plant include the following:

- all major plant items, such as:
  - vessels
  - columns
  - reactors
  - heat exchangers
- minor plant items, such as:
  - pumps
  - valves
  - strainers
  - filters
  - instrumentation (local and remote)

Schematics

Schematics are formally drawn, authorised diagrams and are hard copy or electronic.

Schematics have various names, including:

- piping and instrumentation diagram (P&ID)
- process flow diagram (PFD)
- process engineering flow (PEF)
- cause and effect diagrams/matrix

Manual schematic includes one or more of the following:

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- a hand drawn sketch of the part of the process of interest
- a mark up of a formally drawn schematic

Symbols

Symbols and conventions used in the schematics for the relevant plant area should be used, and include of one or more of the following:

- Australian Standards symbols
- the organisation's standard symbols
- some other standard system

Points required to prepare plant

Points required to prepare plant include three or more of the following:

- isolations
- blank/spade/spectacle blind, breakout spool locations
- draining
- purging
- blanketing
- venting
- ventilating
- locating plant, equipment and services - above ground
- locating below ground (or otherwise obscured) pipeline and services

Key conditions/ variables

Key conditions/variables include one or more of the following:

- normal range of process conditions, such as:
  - level
  - pressure
  - flow
  - temperature
- alarm conditions/values
- trip and emergency shutdown (ESD) values

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS280B Interpret process plant schematics

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Links

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Assessment Requirements for PMAOPS280 Interpret process plant schematics

Modification History

Release 1. Supersedes and is equivalent to PMAOPS280B Interpret process plant schematics

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 include the ability to:

- interpret symbols and other drawing elements and explain their relationship to the plant and process
- identify critical processes and plant items from a schematic
- draw or mark up a schematic and use it to describe main process features and plant items.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- standard/common symbols used on schematics
- schematic conventions (e.g. with particular reference to crossing and branching lines)
- symbols and conventions used by the organisation, if different from common usage
- indications of equipment/pipe specifications
- indications of process conditions/limits.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should occur in operational workplace situations. Where this is not possible or practical, assessment must occur in a sufficiently rigorous simulated environment reflecting 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS290 Operate a biotreater

Modification History

Release 1. Supersedes and is equivalent to PMAOPS290B Operate a biotreater

Application

This unit of competency covers the skills and knowledge required to operate a biotreater.

Biotreaters use aerobic, anaerobic and/or facultative microorganisms at close to ambient temperatures for the reduction of biochemical oxygen demand (BOD) in an aqueous waste stream.

This unit of competency applies to operators who are required to operate all components of the biotreater system, identify and rectify operational problems, predict the potential impact of feed changes and facilitate feed changes to meet requirements.

In a typical scenario, a plant produces an aqueous waste stream which has a high BOD/is contaminated with organic material. This waste stream is treated using a biotreater to produce a clean, low BOD effluent which is acceptable for discharge either to the sewer (as trade waste) or to a receiving waterway where it is within the environmental regulations/license conditions.

This competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant item
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of biotreater
2	**Monitor and control the biotreater processes**	2.1	Get information relevant to the operation of the biotreater
		2.2	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		2.3	Keep feed as consistent as possible
		2.4	Check performance of ancillaries, such as agitation
		2.5	Recognise and interpret trends in biotreater data/appearance
		2.6	Recognise the signs of potential and actual problems
		2.7	Identify the consequences to the biotreater processes of the identified changes, trends and problems
		2.8	Take appropriate action to minimise the impact of potential and actual problems
3	**Ramp performance up/down**	3.1	Anticipate significant changes in feed
		3.2	Breed up/down biomass to prepare for change in feed by changing variables

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		3.3	Ramp changed feed at a rate suitable for the biotreater
		3.4	Establish stable operation for new feed conditions
4	**Maintain effectiveness of biotreater system**	4.1	Monitor biotreater frequently and critically throughout shift using measured/indicated data and senses as appropriate
		4.2	Identify impacts of any changes upstream and downstream
		4.3	Recognise situations which may require action
		4.4	Resolve routine problems
		4.5	Take actions on other abnormal situations to make safe and have the situation resolved
		4.6	Predict impact of a change in the processing plant on the biotreater and take appropriate action
		4.7	Test trips and alarms as required in liaison with the panel operator
5	**Manage impact of shutdowns on biotreater system**	5.1	Identify type of shutdown required/occurring
		5.2	Identify impact of type of shutdown on biotreater
		5.3	Liaise with appropriate people for shutdown
		5.4	Arrange to maintain adequate feed to biotreater for a short plant shutdown
		5.5	Arrange to preserve adequate seed stock of microorganisms for long plant shutdown or shutdown of biotreater
6	**Isolate and de-isolate biotreater**	6.1	Complete any required pre-start checks
		6.2	Start up/shut down biotreater according to the biotreater plant type and duty in liaison with other personnel
		6.3	Isolate biotreater or components

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6.4 Make safe for required work

6.5 Check biotreater is ready to be returned to service

6.6 De-isolate and prepare biotreater/components for return to service

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

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.

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Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- sudden changes in feed (rate, composition and concentration)
- handling a plant shutdown without allowing the microorganisms to die
- control of degree of agitation

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- settling/removal/recycling of biosolids

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Biotreater system

This unit of competency includes all such items of equipment and unit operations which form part of the biotreater system, including as appropriate to the facility:

- pumps (feed and dosing pumps)
- utilities and services, such as air
- agitators
- air/gas supply/removal
- other equipment integral to the operation of the biotreater system

Actions on other abnormal situations

Actions on other abnormal situations includes the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Key variables

Key variables include the following:

- feed rate
- feed composition
- feed concentration
- rapid changes in feed characteristic

Biomass variables

Biomass variables include the following:

- nutrient dosing
- aeration rate (if appropriate)
- agitation rate

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS290B Operate a biotreater

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS290 Operate a biotreater

Modification History

Release 1. Supersedes and is equivalent to PMAOPS290B Operate a biotreater

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 include the ability to:

- start up and shut down the biotreater
- monitor and adjust process variables to meet specifications
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems
- take appropriate action to ensure a timely return to full performance
- distinguish between causes of problems/alarm/fault indications, including:
  - feed variations
  - instrument failure/wrong reading
  - electrical failure
  - mechanical failure
  - operational problem
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the biotreater system and the functions of each
- the nature/condition of materials entering and leaving each stage of the process, the changes which have occurred in that stage and why they have occurred
- the biochemical changes which are occurring in each stage and the methods of controlling them
- methods of ramping up/down in response to feed changes and the advantages and disadvantages of each
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS309 Operate solids handling/storage facility

Modification History

Release 1. Supersedes and is equivalent to PMAOPS309B Operate particulates handling/storage equipment

Application

This unit of competency covers the skills and knowledge required to manage a complex storage facility for particulate solids. A complex storage facility is one where, for example, there are:

- multiple storages which need to be managed
- significant logistics issues related to the transport and storage of the solids
- solids transport systems that allow for various routings of the solids
- possibilities of, or consequences from, contamination which are significant.

This unit of competency applies to operations technicians who are required to determine handling and storage requirements, utilise the storage capacity efficiently, monitor the quality and quantity of stock, set up routing and undertake transfers, undertake minor maintenance and identify and solve problems.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

In a typical scenario the operations technician utilises the storage capacity efficiently, and ensures particulates are stored in the appropriate containers/areas/stock pile. The operations technician also needs to monitor the quality and quantity of stock held in each.

The operations technician would operate the systems transporting particulates into or out of storage. This means setting up the required routing and starting and stopping conveyors/transport systems and their feeder systems (if any) to move materials from one point to another, for example, between storage units, from or into storage.

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During the process the operations technician would monitor the transfer operations, and take action to keep particulates moving correctly. This could include removing blockages and preventing rat holing or bridging in hoppers/silos or other storage problems.

The operations technician would also maintain the cleanliness of the facility, according to procedures, and documenting/reporting maintenance requirements and other issues affecting the operation of the facility. At this level, the operations technician would also recognise and solve problems with the transfer or storage processes. This includes recognising indications of potential problems and taking appropriate and timely remedial action to ensure minimal loss of production time.

This unit of competency also covers identifying and controlling hazards related to particulates handling equipment, storage facilities and surrounding areas.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on handling and storage facility

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		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of handling and storage facility
2	**Prepare storage facilities**	2.1	Identify contents of each storage unit/area in the facility
		2.2	Recognise storage types for each product being stored
		2.3	Identify leakage and other problems with storage facility
		2.4	Confirm safety systems are operational, where required
		2.5	Carry out general housekeeping of facility to remove foreign matter or hazards
		2.6	Record and/or communicate identified maintenance requirements
3	**Operate conveyor/solids transport systems**	3.1	Describe the type of handling and storage facility, the component plant items and their duties
		3.2	Identify the storage required to supply or store particulates
		3.3	Set up routing of transport systems to meet requirements
		3.4	Complete routine checks, logs and paperwork taking appropriate action on unexpected readings
		3.5	Adjust handling facility and its component plant items as appropriate to their type and duty to maximise performance
		3.6	Convey correct material from and to correct location as required
4	**Diagnose and take action on abnormal situations in accordance with procedures**	4.1	Monitor handling and storage facility and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		4.2	Describe impacts of any changes upstream and downstream
		4.3	Recognise actual and developing situations which may

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			require action
		4.4	Apply operational knowledge to resolve problems
		4.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		4.6	Follow through items initiated until final resolution has occurred
5	**Manage particulates storage facility**	5.1	Monitor quality and quantity of stored solids
		5.2	Identify and deal with product contamination
		5.3	Transfer stock into, out of or between storage units as required
		5.4	Supply customers with correct quality and quantity in a timely manner
		5.5	Make effective use of available storage capacity
		5.6	Monitor storage facility for actual or potential problems likely to affect the efficient operation of the facility
6	**Isolate and de-isolate handling and storage facility/equipment**	6.1	Complete any required pre-start checks
		6.2	Start up/shut down handling and storage facility according to the handling and storage facility type and duty in liaison with other personnel
		6.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		6.4	Isolate entire handling and storage facility and/or any component plant item
		6.5	Make safe for required work
		6.6	Check handling and storage facility/plant item is ready to be returned to service
		6.7	De-isolate and prepare handling and storage facility/plant item for return to service

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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

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.

Hazards

Hazards include one or more of the following:

- solids falling from conveyors
- electricity
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)

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- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Situations requiring action

Situations requiring action include one or more of the following:

- damage to particulates
- damage to conveyors/storage
- contamination of stored stock
- rat holing and bridging in silos/hoppers
- routing issues, and so on
- storage vessel/area capacities

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty

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- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment

Equipments includes, as appropriate to the site, one or more of the following:

- mechanical conveyors/feeders (including belt, vibrating, screw and flight; and feeders, such as screw, star, slide, volumetric and weight)
- pneumatic conveyors (including aspects such as dense phase, disperse phase, pressure and vacuum)
- storage facilities (e.g. silos, hoppers, stock piles and including purging hoppers)
- ancillary equipment, such as drive motors, hydraulics, coolers, fans/blowers, safety equipment and instrumentation

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

This competency does not require the operation of a central control panel.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS309B Operate particulates handling/storage equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS309 Operate solids handling/storage facility

Modification History

Release 1. Supersedes and is equivalent to PMAOPS309B Operate particulates handling/storage equipment

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 includes the ability to:
- perform pre-start checks, start-up/shutdown and cleaning procedures, and isolations and de-isolations
- set up routing of transport systems
- operate and monitor equipment to safely move stock to and retrieve from the appropriate areas
- identify hazards and risks and apply risk control procedures
- identify early warning signs of equipment/stock needing attention or with potential problems and take action
- resolve non-routine problems
- manage storage area taking into account quality and quantity of stock, effective use of storage capacity and customer needs

identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of plant/equipment
- interactions between plant items/processes
- systems' operating parameters and integrity limits, product specifications and tolerances
- impact of external factors (e.g. variations in weather)
- function and troubleshooting of major components and their problems and resolution
- particulate properties
- logistics
- forward demand
- material storage requirements
- compatibility and contamination issues
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes

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- potential consequences
- appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type storage and handling facility appropriate to this unit allowing demonstration of operation
  - may use industry-based simulation for part only of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS319 Adjust batch

Modification History

Release 1. Supersedes and is equivalent to PMAOPS319A Adjust batch

Application

This unit of competency covers the skills and knowledge required to make adjustments to a batch of product to bring into specification. The adjustments may be to the chemical, physical or biological properties of the batch (or some combination of these).

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to interpret test results, estimate and make adjustments, and identify, correct and report operational problems.

This unit of competency applies to a range of manufacturing processes, for example, chemical reaction between materials, dissolution or mixing of materials. It typically applies in batch plants where variability of materials leads to a variability in product which needs to be adjusted for.

In a typical scenario a batch has been made in a batch kettle or vessel.

After the batch has initially been made there will be some testing of the batch and then some adjustments will need to be made to bring it into specification. The adjustments may be to the chemical, physical or biological properties of the batch (or some combination of these). The adjustments will typically occur in the making kettle/vessel although this is not a necessary component of this unit.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit does not apply to testing. See relevant testing unit.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
2	**Estimate required adjustment in accordance with procedures**	2.1	Take samples for required test
		2.2	Interpret test results
		2.3	Identify any conflicting or suspicious results and take action
		2.4	Identify required adjustment protocol for this adjustment
		2.5	Estimate amount and type of materials to be added or other adjustments required
		2.6	Estimate duration of this adjustment
3	**Make adjustment**	3.1	Obtain required materials for adjustment
		3.2	Determine addition rate for materials/rate of applying adjustment
		3.3	Make adjustment at the determined rate

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		3.4	Monitor the batch as the adjustment occurs using measured/indicated data and senses
		3.5	Take action specified by procedures
4	**Recheck batch**	4.1	Repeat the adjustment process as required to bring batch to specification
		4.2	Identify likely problems arising from adjustment process
		4.3	Take action specified by procedures

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

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

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performance criteria and HSE requirements, the HSE requirements take precedence.

Hazards

Hazards include one or more of the following:

- electricity
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Monitoring

Batch is monitored for one or more of the following:

- product deterioration from extended processing
- kettle/vessel overflows from repeated material additions
- misleading test results causing inappropriate adjustments

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

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- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

This competency does not require the operation of a central control panel.

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Equipment and unit operations

Equipment and unit operations which form part of the product manufacture/adjustment system include two or more of the following:

- kettle or mixing vessel
- heating and or cooling
- material addition equipment
- pumps, valves and pipes
- mixers

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- fume/vapour extraction
- reflux systems
- emergency shutdown systems
- communications systems

Adjustment protocol

Adjustment protocols include one or more of the following:

- aiming to make a '90% (or other%) adjustment' first time
- aiming to 'hit the target' first time
- under/overshoot the target
- other techniques for achieving optimal adjustment as defined by the organisation

Adjustments required

Adjustments required include one or more of the following:

- adding more of some of the original materials
- adding some additional materials
- continuing to heat/stir or otherwise process the batch (with or without material addition)

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS319A Adjust batch

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS319 Adjust batch

Modification History

Release 1. Supersedes and is equivalent to PMAOPS319A Adjust batch

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 include the ability to:

- analyse and interpret test results
- use data and senses to monitor plant and maximise performance
- apply process knowledge to determine and make adjustments to achieve specifications
- identify hazards and risks and apply risk control procedures
- identify early warning signs of equipment/processes needing attention or with potential problems
- resolve problems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- systems' operating parameters, integrity limits, including temperature, pressure, flow, pH and concentration
- product specifications and tolerances
- methods of controlling the reaction/or adjustment, including rate and yield and the advantages and disadvantages of each
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions
- process-specific science (physics, chemistry and biochemistry) to the level of being able to interpret the science and extract factors controlling the process and product and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions, such as by-products)
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial style vessel allowing for adjustment of contents
  - may use industry-based simulation for part only of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS350 Match and adjust colour

Modification History

Release 1. Supersedes and is equivalent to PMAOPS350B Match and adjust colour

Application

This unit of competency covers the skills and knowledge required to recommend adjustments to bring product colour into the acceptable range using a mixture of colourants. It applies to products, such as:

- paint
- ink
- concrete
- rubber
- plastic
- dye mixes/dyed materials.

Any suitable colourants, such as those below may be used:

- pigments
- dyes
- masterbatches
- tinters.

This unit of competency applies to technicians who are required to apply a significant understanding of colour to prepare colour samples, compare the sample to the standard, and estimate colourant additions needed to bring the batch to standard. The comparison may be done using a ‘colour computer’ or by eye.

This unit of competency is typically performed by technicians working independently while in liaison with operators, paint/industrial chemists or other personnel.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare colour sample**	1.1	Identify required sample properties
		1.2	Select sample preparation method
		1.3	Identify required sample preparation conditions
		1.4	Adjust and control sample preparation conditions
		1.5	Prepare colour sample
2	**Compare colour sample to standard in accordance with procedures**	2.1	Identify light conditions for comparison
		2.2	Compare colour sample to standard using 'colour computer' and/or by eye
		2.3	Reconcile data from comparison
3	**Recommend adjustments to batch**	3.1	Estimate the colourant additions needed to bring batch to standard
		3.2	Recommend additions to relevant personnel
		3.3	Recommend additional mixing/processing requirements to procedure
		3.4	Repeat sample preparation, colour matching and adjustment until correct colour is obtained

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- equipment failures
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- slippery surfaces, spills or leaks
- other hazards that might arise

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Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS350B Match and adjust colour

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS350 Match and adjust colour

Modification History

Release 1. Supersedes and is equivalent to PMAOPS350B Match and adjust colour

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 include the ability to:

- control sample preparation conditions, including one or more of:
  - temperature
  - drying rate
  - time
  - pressure
  - volume
- discriminate differences in hue, value and chroma (or colour/tone, lightness/shade and saturation)
- recognise colourant addition and colourant dispersion differences
- make judgements based on:
  - perceptibility
  - acceptability/tolerance
  - grade 1, 2 or 3 match as required by specification
- interpolate and extrapolate data
- calculate required adjustments consistent with the colour match data
- recommend adjustments that avoid overshooting and minimise the number of adjustments to bring the batch into specification.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of sample preparation methods, such as:
  - draw down
  - spraying
  - brushing
  - moulding
  - casting
  - milling
  - pressing

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- the impact of sample properties, including surface finish, gloss, thickness, opacity, substrate properties on sample preparation methods and conditions
- the effect of a change of light conditions on the appearance of the colour for the pigment combination used as relevant to the product
- the impact of opacity on colour as relevant to the product
- types and application of colourants relevant to the application.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the adjustment of a commercial scale batch and equipment to meet a suitable colour standard
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS360 Operate a metalliferous kiln/furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS360A Operate a metalliferous kiln/furnace

Application

This unit of competency covers the skills and knowledge required to operate and monitor a metalliferous (or similar) kiln/furnace and ancillary equipment.

The kiln/furnace will typically be used in a metalliferous processing facility for the high temperature treatment of ores or other minerals causing the thermal decomposition of the feed, such as in calcining or reaction with a gas or reductant, such as in roasting. The feed and product are solids. It does not apply to the handling of molten metal.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, contribute to start-up and shutdown processes, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on kiln/furnace
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of the kiln/furnace
2	**Operate kiln/furnace**	2.1	Describe the type of kiln/furnace, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Adjust feed composition and rate, gas flows and temperatures to meet product requirements
		2.4	Change rate, grade or specification smoothly in accordance with procedures
3	**Diagnose and take action on abnormal situations in accordance with procedures**	3.1	Monitor kiln/furnace and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Describe impacts of any changes upstream and downstream
		3.3	Recognise actual and developing situations which may

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			require action
		3.4	Apply operational knowledge to resolve problems
		3.5	Take actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		3.6	Follow through items initiated until final resolution has occurred
4	**Isolate and de-isolate kiln/ furnace and its component plant items**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down kiln/furnace according to its type and duty in liaison with other personnel
		4.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		4.4	Isolate entire kiln/furnace system and/or any component plant item
		4.5	Make safe for required work
		4.6	Check kiln/furnace system/component plant item is ready to be returned to service
		4.7	De-isolate and prepare kiln/furnace/plant item for return to service

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

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems are predictable with known solutions and include one or more of the following:

- variations in feed material
- control of air flow
- control of fuel flow
- control of feed rates and composition of feeds
- control of output product

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some

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other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Kiln/furnace/ancillary equipment

Kiln/furnace ancillary equipment includes:

- equipment integral to the operation of the kiln/furnace, such as fans/blowers, feed equipment and utility supply

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation

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- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS360A Operate a metalliferous kiln/furnace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS360 Operate a metalliferous kiln/furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS360A Operate a metalliferous kiln/furnace

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 include the ability to:

- use data and own senses to monitor plant and maximise performance
- adjust feeds, composition and rate, gas flows and temperatures to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- predict impact of a change in one unit/area on other plant units/areas and take action
- resolve routine and non-routine problems
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of kiln/furnace and ancillary equipment, function and troubleshooting of major components and their problems
- process -specific science (physics and chemistry) to the level of being able to interpret the science and extract factors controlling the process and product, and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions/by-products)
- process parameters and limits, including temperature, air pressure/flow, materials flow rates and fuel pressure/flow, product tolerances, limitations and specifications
- effects of varying kiln/furnace conditions, raw materials feed rates, quality, composition and proportions on finished product composition
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial style kiln/furnace allowing operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS361 Operate a smelting furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS361A Operate a smelting furnace

Application

This unit of competency covers the skills and knowledge required to operate a smelting furnace and ancillary equipment.

The smelting furnace will typically be used in an industrial scale metalliferous processing facility.

This unit of competency applies to ore smelting where the feed is a solid in the form of ore, crushed rock or a mixture which may include flux materials; and the product is molten metal and slag. The smelting process induces some chemical changes in the feed as well as melting the product. However, it may be applied to other materials with appropriate contextualisation.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, determine and apply the raw materials feed, contribute to start-up and shutdown processes, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on smelter
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of smelter
2	**Operate smelting furnace**	2.1	Describe the type of smelter, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
		2.3	Change rate, grade or specification smoothly as required
		2.4	Adjust feeds composition and rate, gas flows and temperatures to meet product requirements
		2.5	Adjust smelter and its component plant items as appropriate to their type and duty to maximise performance

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3	**Recognise problems and take action in accordance with procedures**	3.1	Monitor smelter and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Describe impacts of any changes upstream and downstream
		3.3	Recognise actual and developing situations which may require action
		3.4	Apply operational knowledge to resolve problems
		3.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		3.6	Follow through items initiated until final resolution has occurred
4	**Isolate and de-isolate smelter and its component plant items**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down smelter according to the smelter type and duty in liaison with other personnel
		4.3	Start up/shut down/changeover component plant items within smelter unit according to their type and duty in liaison with other personnel
		4.4	Isolate entire smelter and/or any component plant item
		4.5	Make safe for required work
		4.6	Check smelter/plant item is ready to be returned to service
		4.7	De-isolate and prepare smelter/plant item for return to service

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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 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

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.

Hazards

Hazards include one or more of the following:

- molten metal
- electricity
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions

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- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- variations in feed material
- control of gas flow
- control of feed rates, and composition of feeds
- control of tapping rates of slag and molten product

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other

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form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS361A Operate a smelting furnace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS361 Operate a smelting furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS361A Operate a smelting furnace

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 include the ability to:

- use data and own senses to monitor plant and maximise performance
- adjust feeds, composition and rate, gas flows and temperatures to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- apply process knowledge to monitor and take action on abnormal situations
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of smelting furnace and ancillary equipment function, and troubleshooting of major components and their problems
- process-specific science (physics and chemistry) to the level of being able to interpret the science and extract factors controlling the process and product, and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions/by-products)
- process parameters and system integrity limits, including temperature, air pressure/flow, materials flow rates, fuel pressure/flow, gas/flux/ rates, product tolerances, limitations and specifications
- effects of varying furnace conditions, raw materials feed rates, quality, composition and proportions on finished product composition
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial style smelter allowing operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS362 Operate a blast furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS362A Operate a blast furnace

Application

This unit of competency covers the skills and knowledge required to operate a blast furnace.

The blast furnace will typically be used in an industrial scale metalliferous processing facility. Blast furnaces, in common with smelters, have a solid feed and a molten product produced by a reduction reaction. However, they operate with a counter current blast of hot air and reductant gases. This unit of competency applies to iron, lead and copper blast furnaces. However, it may be applied to other metals and ores with appropriate contextualisation.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, determine and apply the raw materials feed, contribute to start-up and shutdown processes, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on blast furnace
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of blast furnace
2	**Operate blast furnace**	2.1	Describe the type of blast furnace, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Change rate, grade or specification smoothly as required
		2.4	Adjust feeds, composition and rate, air flows and temperatures to meet production requirements
		2.5	Adjust blast furnace and its component plant items as appropriate to their type and duty to maximise performance
3	**Diagnose and take action on abnormal situations in accordance with**	3.1	Monitor blast furnace and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Describe impacts of any changes upstream and

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	procedures		downstream
		3.3	Recognise actual and developing situations which may require action
		3.4	Apply operational knowledge to resolve problems
		3.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		3.6	Follow through items initiated until final resolution has occurred
4	**Isolate and de-isolate blast furnace and its component plant items**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down blast furnace according to the blast furnace type and duty in liaison with other personnel
		4.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		4.4	Isolate entire blast furnace and/or any component plant item
		4.5	Make safe for required work
		4.6	Check blast furnace/plant item is ready to be returned to service
		4.7	De-isolate and prepare blast furnace/plant item for return to service

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.

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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

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.

Hazards

Hazards include one or more of the following:

- molten metal
- electricity
- gas
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

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Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- variations in feed material
- control of gas flow
- control of feed rates and composition of feeds
- control of tapping rates of slag and molten product

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions

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- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS362A Operate a blast furnace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS362 Operate a blast furnace

Modification History

Release 1. Supersedes and is equivalent to PMAOPS362A Operate a blast furnace

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 include the ability to:

- use data and own senses to monitor plant and maximise performance
- adjust feeds, composition and rate, air flows and temperatures to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- identify early warning signs of equipment/processes needing attention or with potential problems and take action
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of blast furnace and ancillary equipment
- process-specific science (physics and chemistry) to the level of being able to interpret the science and extract factors controlling the process and product, and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions/by-products)
- systems' operating parameters, integrity limits, including temperature, air pressure/flow, materials flow rates, fuel pressure/flow, gas/flux/additives rates, product tolerances, limitations and specifications
- effects of varying furnace conditions, raw materials feed rates, quality, composition and proportions on finished product composition
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
- their possible causes
- potential consequences
- appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type blast furnace allowing operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS364 Operate an electrochemical process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS364A Operate an electrochemical process

Application

This unit of competency covers the skills and knowledge required to operate an electrochemical process in the metalliferous or chemical industry.

This unit of competency applies to electrochemical processes for the extraction of metals from their ores, such as electrowinning of copper, zinc, nickel and other metals, where the metal is extracted from an ore solution and electrorefining of copper from blister copper, lead, nickel, silver and other metals, where the metal is purified by electroplating pure metal from an intermediate product. It may be applied to other metals and also processes, such as chlorine/caustic soda with appropriate contextualisation.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, conduct start-up and shutdown and isolation of cells, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

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Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on electrochemical system
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of electrochemical system
2	**Operate electrochemical process**	2.1	Describe the type of electrochemical system, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected reading
		2.3	Change rate, grade or specification smoothly as required.
		2.4	Adjust solution volume, feed quality, temperatures, electrical current, voltage and production rate, in accordance with procedures
		2.5	Adjust electrochemical system and its component plant items as appropriate to their type and duty to meet production requirements

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		2.6	Pull and strip plates/electrodes in accordance with procedures
3	**Diagnose and take action on abnormal situations in accordance with procedures**	3.1	Monitor electrochemical system and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Describe impacts of any changes upstream and downstream
		3.3	Recognise actual and developing situations which may require action.
		3.4	Apply operational knowledge to resolve problems
		3.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		3.6	Follow through items initiated until final resolution has occurred
4	**Isolate and de-isolate electrochemical system and its component plant items**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down electrochemical system according to the electrochemical system type and duty in liaison with other personnel
		4.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		4.4	Isolate entire electrochemical system and/or any component plant item
		4.5	Make safe for required work
		4.6	Check electrochemical system /plant item is ready to be returned to service
		4.7	De-isolate and prepare electrochemical system/plant item for return to service

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours

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- fire and explosion
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- variations in feed material
- control of temperature
- control of feed rates and composition of feeds
- control of impurities, waste material and irregularities

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers and
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions

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- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS364A Operate an electrochemical process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS364 Operate an electrochemical process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS364A Operate an electrochemical 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, and include the ability to:

- use data and own senses to monitor plant and maximise performance
- adjust feeds, composition and rate, gas flows and temperatures to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- identify early warning signs of equipment/processes needing attention or with potential problems and take action
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of electrochemical process and ancillary equipment
- process-specific science (physics, chemistry and biochemistry) to the level of being able to interpret the science and extract factors controlling the process and product, and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions and by-products)
- systems' operating parameters, integrity limits, product tolerances, limitations and specifications, temperature, flow and electrical parameters
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type electrochemical processing equipment allowing for operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:

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  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS365 Operate pelletising equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS365A Operate pelletising equipment

Application

This unit of competency covers the skills and knowledge required to operate pelletising equipment as used in a metalliferous minerals or other processing plant and the associated ancillary equipment.

This unit of competency includes all equipment and processes which form part of the pelletising system, including as appropriate to the facility:

- grate-kiln processes
- travelling grate processes
- mixing
- balling
- indurating
- conveyors
- feeders
- rollers.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, perform start-up, shutdown and isolation processes, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on pelletising (plant unit)
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of pelletising equipment
2	**Operate pelletising plant**	2.1	Describe the type of pelletising, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Change rate, grade or specification smoothly as required
		2.4	Adjust feed rate, pressure and temperature of pelletising plant and its component plant items as appropriate to their type and duty to maximise performance

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3	**Operate ancillary equipment**	3.1	Monitor critical variables, such as amps, temperature and vibration
		3.2	Keep critical variables in range
		3.3	Recognise trends/patterns which indicate a potential or actual problem with the ancillary equipment
		3.4	Take action to ensure ancillary equipment is returned to full performance in a timely manner
4	**Diagnose and take action on abnormal situations in accordance with procedures**	4.1	Monitor pelletising and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		4.2	Describe impacts of any changes upstream and downstream
		4.3	Recognise actual and developing situations which may require action
		4.4	Apply operational knowledge to resolve problems
		4.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		4.6	Follow through items initiated until final resolution has occurred
5	**Isolate and de-isolate pelletising plant and its component plant items**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down pelletising plant according to its type and duty in liaison with other personnel
		5.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		5.4	Isolate entire pelletising plant and/or any component plant item
		5.5	Make safe for required work

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5.6 Check pelletising plant/plant item is ready to be returned to service

5.7 De-isolate and prepare pelletising plant/plant item for return to service

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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- structural hazards
- structural collapse

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- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- blockages/build-up/fouling
- erosion/wear
- ancillary equipment problems

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

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Start up/shut down

Start up shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers

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- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS365A Operate pelletising equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS365 Operate pelletising equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS365A Operate pelletising equipment

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 include the ability to:

- use data and own senses to monitor pelletising plant and maximise performance
- adjust feeds, temperature and pressure to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- identify early warning signs of equipment/processes needing attention or with potential problems and take action
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of pelletising plant/equipment
- process-specific science (physics and chemistry) to the level of being able to interpret the science and extract factors controlling the process and product, and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions and by-products)
- systems' operating parameters, integrity limits, product tolerances, limitations and specifications, feed rate, temperature, pressure, flow and pH
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type pelletising equipment allowing for operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS366 Operate sintering equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS366A Operate sintering equipment

Application

This unit of competency covers the skills and knowledge required to operate sintering equipment as used in a metalliferous minerals or other processing plant and ancillary equipment.

Sintering is the process of applying sufficient heat and pressure to smaller solid particles to cause them to fuse together into larger particles without the entire particle melting. Many processes are used to achieve this.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, perform start-up, shutdown and isolation processes, and operate and monitor equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on sintering plant
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of sintering plant
2	**Operate sintering plant**	2.1	Describe the type of sintering plant, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Change rate, grade or specification smoothly as required
		2.4	Adjust feed rate, suction rate and temperature of sintering plant and its component plant items in accordance with procedures
3	**Operate cooling and screening equipment**	3.1	Monitor critical variables such as temperature, depth of sinter and sinter size
		3.2	Keep critical variables in range
		3.3	Recognise trends/patterns which indicate a potential or actual problem with the cooling and screening equipment

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4	**Diagnose and take action on abnormal situations in accordance with procedures**	4.1	Monitor sintering plant unit and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		4.2	Describe impacts of any changes upstream and downstream
		4.3	Recognise actual and developing situations which may require action
		4.4	Apply operational knowledge to resolve problems
		4.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		4.6	Follow through items initiated until final resolution has occurred
5	**Isolate and de-isolate sintering system and its component plant items**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down sintering system according to the sintering system type and duty in liaison with other personnel
		5.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		5.4	Isolate entire sintering system and/or any component plant item
		5.5	Make safe for required work
		5.6	Check sintering system/plant item is ready to be returned to service
		5.7	De-isolate and prepare sintering system/plant item for return to service

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours

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- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- moisture content
- blockages in discharge chutes
- debris/build-up on roll feeder
- pallet seal and wind box leakage

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions

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- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS366A Operate sintering equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS366 Operate sintering equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS366A Operate sintering equipment

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 include the ability to:

- use data and own senses to monitor sintering plant and maximise performance
- adjust feeds, rates, pressures and temperatures to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- identify early warning signs of equipment/processes needing attention or with potential problems and take action
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of sintering plant/equipment
- process-specific science (physics and chemistry) to the level of being able to interpret the science and extract factors controlling the process and product and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions and by-products)
- systems' operating parameters, integrity limits, product tolerances, limitations and specifications, feed rate, temperature, pressure, flow and pH
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type sintering plant allowing operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS390 Operate a biochemical process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS390B Operate a biochemical process.

Application

This unit of competency covers the skills and knowledge required to operate a biochemical process and ancillary equipment to produce chemical or biological materials as product. It applies to biochemical processes that use enzymes, such as amylases; moulds, such as yeasts; and/or bacteria, such as *e coli*. It applies to batch and continuous processes.

Products could include industrial alcohol, corn starch, insulin or other industrial fermentation/biochemical processes. This unit applies to the biochemical conversion plant unit.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, predict the potential impact of changes from other plant sections on biochemical process, and facilitate output changes.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on biochemical unit
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of biochemical unit
2	**Operate the biochemical processes**	2.1	Describe the type of biochemical plant unit, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork
		2.3	Check performance of all ancillaries (such as mixing and heat exchange)
		2.4	Recognise and interpret trends in bioreactor data/appearance
		2.5	Recognise the signs of potential and actual problems
		2.6	Identify the consequences to the bioreactor processes of the identified changes, trends and problems
		2.7	Keep conditions within the optimum range
		2.8	Take action to minimise the impact on health, safety and environment (HSE) and the business of potential and actual problems

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3	**Ramp output up/down**	3.1	Predict from rates and schedule when a change will be required
		3.2	Give advanced notice of change to work team
		3.3	Prepare plant for the change
		3.4	Predict the required amount of adjustment to cause the required change
		3.5	Make the change in a controlled manner without excessive variation
		3.6	Monitor the progress of the change and make minor adjustments as required
4	**Diagnose and take action on abnormal situations in accordance with procedures**	4.1	Monitor biochemical unit and its component plant items frequently and critically throughout shift using measured/indicated data and senses.
		4.2	Describe impacts of any changes upstream and downstream
		4.3	Recognise actual and developing situations which may require action
		4.4	Apply operational knowledge to resolve problems
		4.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation.
		4.6	Follow through items initiated until final resolution has occurred
5	**Isolate and de-isolate biochemical unit and its component plant items**	5.1	Complete any required pre-start checks
		5.2	Start up/shut down biochemical unit according to its type and duty in liaison with other personnel
		5.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel

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		5.4	Isolate entire biochemical unit and/or any component plant item
		5.5	Make safe for required work
		5.6	Check biochemical unit/plant item is ready to be returned to service
		5.7	De-isolate and prepare biochemical unit/plant item for return to service
6	**Clean reactors/vessels**	6.1	Identify cleaning requirements
		6.2	Clean to requirements according to procedures
		6.3	Retain microorganisms contained in the plant and prepare for reuse as appropriate
		6.4	Dispose of waste materials according to procedures

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

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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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems are predictable and have known solutions and include one or more of the following:

- sudden changes in feed (rate, composition, concentration)
- changes in required production rate
- changes in ambient conditions (e.g. summer to winter operation)
- handling a plant shutdown without allowing the microorganisms to die
- control of degree of agitation
- settling/removal/recycling of microorganisms
- feed variations
- instrument failure/wrong reading
- electrical failure
- mechanical failure
- operational problem

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Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its

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component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Bioreactor system

This unit of competency includes all such items of ancillary equipment and unit operations which form part of the bioreactor system. A unit/system comprises two or more components of plant/equipment that are operated together to produce product, including as appropriate to the facility, one or more of the following:

- pumps (feed and dosing pumps)
- utilities and services, such as air
- agitators
- air/gas supply and/or removal
- temperature control equipment, such as heaters, coolers and heat exchangers
- other equipment integral to the operation of the bioreactor system

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS390B Operate a biochemical process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS390 Operate a biochemical process

Modification History

Release 1. Supersedes and is equivalent to PMAOPS390B Operate a biochemical 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, and include the ability to:

- use data and own senses to monitor plant and maximise performance
- adjust processes parameters to meet product requirements
- perform pre-start checks, start-up/shutdown procedures, and isolations and de-isolations
- identify early warning signs of equipment/processes needing attention or with potential problems
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of biochemical process and ancillary equipment
- process-specific science (physics, chemistry and biochemistry) to the level of being able to interpret the science and extract factors controlling the process and product and by-product production rate and quality
- systems' operating parameters, integrity limits, including feed, desired output, temperature, agitation, aeration (if appropriate), microorganism/enzyme, product tolerances, and impact of external factors (e.g. variations in weather and feed)
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type biochemical process and equipment allowing operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS402 Respond to abnormal process situations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS402A Respond to abnormal process situations

Application

This unit of competency covers the skills and knowledge required to recognise and resolve abnormal process situations that are complex and/or not solvable by direct observation. The problem would normally impact an entire plant system or process. Examples include damage to/wear of tower trays, internal leaks of heat exchangers and collapse of/channelling in tower/column/vessel packing.

This unit of competency applies to senior technicians, para-professionals or those in similar roles who are required to apply in depth knowledge of process and plant in order to methodically investigate process, plant and technical problems, determine the cause and initiate corrective action.

This role is often performed using a small, usually ad hoc group, however, the person will take a lead technical role.

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

Pre-requisite Unit

MSMSUP390 Use structured problem-solving tools

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Recognise there is a problem**	1.1	Compare current performance with expected/historic performance
		1.2	Identify plant/process areas with poor performance
		1.3	Check the impact of routine adjustments to improve performance
		1.4	Identify problems not solved by the routine solutions
2	**Define the problem**	2.1	Apply problem isolation techniques to isolate problem to a small part of the plant/process
		2.2	Quantify the effect of the problem in operational terms
		2.3	Postulate possible causes of the problem
		2.4	Identify types of evidence of each possible cause
		2.5	Investigate problem to accumulate evidence of cause type
		2.6	Analyse data to confirm cause of problem
		2.7	Determine the level of severity of the problem and priority of any required action
3	**Develop solution**	3.1	Discuss possible solutions to cause with stakeholders and technical experts
		3.2	Determine whether a quick fix is needed
		3.3	Arrange for implementation of quick fix if required
		3.4	Check effectiveness of quick fix and take action to maintain stable, safe operation
		3.5	Agree required final solution with stakeholders and technical experts
		3.6	Arrange for required solution to be undertaken in appropriate timeframe
		3.7	Follow items initiated through until final resolution has

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occurred

3.8 Check effectiveness of solution and take action to maintain or improve outcome

3.9 Complete reports to procedure

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

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, include one or more of the following:

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- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Problem isolation

Problem isolation uses techniques to isolate the cause of the problem to a specific part of the process or unit operation and uses techniques including one or more of the following:

- flow charts
- process logic/process requirements
- cause and effect diagrams/charts
- divide and conquer
- control charts, run charts (Shewhart charts)
- similarity/difference analysis
- other structured processes defined by the organisation

Problem analysis

Problem analysis identifies possible causes and examines the evidence for each cause and uses techniques including one or more of the following:

- Ishikawa/fishbone diagrams/
- logic tree
- histograms/Pareto analysis
- scatter grams
- brainstorming
- control charts, run charts (Shewhart charts)
- 6 Hats (Edward de Bono)
- other structured processes defined by the organisation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS402A Respond to abnormal process situations

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Assessment Requirements for PMAOPS402 Respond to abnormal process situations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS402A Respond to abnormal process situations

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 include the ability to:

- recognise signs of variations of plant and process that indicate different types of problems
- select and apply problem isolation and analysis techniques to determine the most likely cause of problem
- determine and initiate any immediate corrective action (quick fix) required
- determine and initiate longer term solution
- communicate and negotiate effectively with all stakeholders
- follow through to ensure resolution of problems
- undertake calculations.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation and process science for all unit operations within the system/area and the interrelationships between them
- cause/effect relationships between plant/process condition and process variable values
- indicators of abnormal process situations, and evidence of which cause is responsible for the abnormal situation
- impact of variations in plant and process and the distinctive signs of each variation (e.g. lower quality, lower rates, greater variability or greater difficulty in control).

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Where competency has not been previously attained in *MSMSUP390 Use structured problem-solving tools* it may be co-delivered and co-assessed.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
    - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria

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  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a simulated environment that reflects 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, or a real project in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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PMAOPS405 Operate complex control systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS405A Operate complex control systems

Application

This unit of competency covers the skills and knowledge required to operate a complex control panel. The panel will control entire plant areas and multiple products/process streams and will use a large number of control loops and a broad range of control algorithms; and will probably include advanced process control (APC) as one of its operations. Its operation will require managing multiple complex tasks.

This unit of competency includes all such items of equipment and unit operations which form part of the control system, including as appropriate to the facility:

- process control systems (e.g. distributed control systems (DCS), and supervisory control and data acquisition (SCADA))
- use of multiple control systems
- interacting control loops/cascade control
- personal computers
- printers
- fire and gas detection/protection systems
- emergency shutdown (ESD) systems
- communications systems.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant to in order to operate, monitor and optimise an entire plant area consisting of several plant units/systems, solve process problems and liaise with other plant areas.

This control system would typically be an advanced control system and may include operation of simpler control systems as part of its operation. The panel will typically be located off plant in a control room.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Use operator interface**	1.1	Use keyboards, track ball and monitor and/or stand-alone controllers to access control system/panel
		1.2	Monitor the process using the operator interfaces
		1.3	Select appropriate controller modes
		1.4	Access historical data and information
		1.5	Acknowledge messages and alarms
		1.6	Access advanced control features as appropriate
2	**Access control information**	2.1	Obtain relevant data and information from the control system by applying systems knowledge
		2.2	Identify the status of individual pieces of equipment from the control panel and use information to identify potential faults
		2.3	Minimise fluctuations and variations in process through the interpretation of existing trends and control schematics
		2.4	Determine the overall operating effectiveness of the plant area related to the required targets for the area
		2.5	Record process variations/irregularities to procedures
3	**Control process variations and**	3.1	Monitor process using all information available in the control room

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	monitor operations	3.2	Use historical data to assist the identification of problems
		3.3	Process available information to identify potential faults
		3.4	Undertake required set point/output changes to meet plant area and process requirements
		3.5	Adjust production in response to test results and control panel information
		3.6	Monitor key process and environmental variables and take action to achieve required outcomes
		3.7	Adjust controller settings in accordance with procedures
		3.8	Use advanced control features as appropriate
		3.9	Turn controller features on and off to meet process and control needs
		3.10	Optimise operation of entire plant area in accordance with guidelines
		3.11	Undertake calibration operations in accordance with procedures.
		3.12	Coordinate with stakeholders external to the plant area in accordance with procedures
		3.13	Record adjustments and variations to specifications/schedules
		3.14	Communicate to appropriate personnel as required
4	**Facilitate planned and unplanned process start-ups and shutdowns**	4.1	Select and apply procedures to planned start-up and shutdown processes.
		4.2	Select and apply procedures to unplanned shutdown processes
		4.3	Implement all required emergency responses
		4.4	Communicate necessary information to all personnel affected by events
		4.5	Log all required information

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5	**Respond to alarms or out-of-specification conditions**	5.1	Identify system(s) affected by the alarm or condition
		5.2	Interpret alarms and prioritise actions to be taken
		5.3	Respond to the alarm or incident by following procedures
		5.4	Deal with any out-of-specification material in accordance with procedures
		5.5	Communicate the problem/solution to appropriate personnel
		5.6	Record the information as required
		5.7	Provide details of the alarm and action taken to the next shift at changeover
		5.8	Follow up on the incident to see that appropriate action has been taken
6	**Control hazards**	6.1	Identify hazards/changes in hazards in the production/processing work area
		6.2	Assess the risks arising from those hazards
		6.3	Implement measures to control risks in line with procedures and duty of care
		6.4	Communicate hazards and hazard controls to affected personnel
7	**Resolve other problems within scope of responsibility**	7.1	Identify possible problems in equipment, control systems or process
		7.2	Determine problems needing action
		7.3	Determine possible fault causes
		7.4	Rectify problem using appropriate solution within area of responsibility
		7.5	Follow initiated items through until final resolution has occurred

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7.6 Report problems outside area of responsibility to designated person

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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gases and liquids under pressure
- equipment failures
- noise, rotational equipment or vibration

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- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

- operating without advanced control features
- loss of power/utilities
- analysing failure modes
- variation/loss of feed
- unstable control of pressure, temperature level and flows
- control equipment failure
- process plant trips
- change in atmospheric conditions (rain, temperature, wind and lightning)
- emergency situations
- control function problems

Non-routine

Non-routine problems are unexpected problems, or variations of previous

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problems

problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Alarms or abnormal conditions

Alarms or other abnormal conditions include the following:

- emergency, including emergency shutdown (ESD)
- partial or complete controller failure

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS405A Operate complex control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS405 Operate complex control systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS405A Operate complex control 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, and include the ability to:

- interpret and respond to panel messages and alarms
- obtain and interpret data from the control system to minimise variation and maximise performance
- identify early warning signs of equipment/processes needing attention or with potential problems
- select and apply procedures for planned and unplanned start-up/shutdown
- identify hazards and risks and apply risk control procedures
- communicate and negotiate effectively with all stakeholders
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - equipment design deficiencies
  - product parameters (temperature, flows, pressure and levels)
  - process control system malfunction
  - power/utility failures
  - software problems
  - multitasking.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- advanced control features
- interactions between control loops
- interactions between plant units within the entire plant
- the architecture and location of the process/production equipment
- specific plant process operations
- interactions between plant items/processes

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- product specifications and tolerances, systems operating parameters and system integrity limits
- process control philosophies and strategies
- emergency shutdown (ESD) procedures
- relevant science of the process (e.g. physics, chemistry and biochemistry) to the level of identifying and manipulating factors controlling process rate and product properties, and identifying and resolving potential problems
- basic science of upstream and downstream processes
- interactions between plant area and other value stream members
- impact of external factors (e.g. variations in weather and feed)
- complex process drawings (e.g. piping and instrumentation diagram (P&ID), process flow diagram (PFD), and cause and effect
- basis of control for the plant
- instrumentation and control systems, including feed forward, feed-back and open control
- instrumentation and control system components (e.g. relevant primary sensing devices, final control elements and transducers/transmitters)
- control loops (including proportional integral derivative (PID) control, set points, controlled variable and indicated variable)
- interaction between multiple control loops (including cascade control)
- impacts of changing controller settings and the limits within which changes can be made
- effective communication techniques
- organisation procedures
- uninterrupt power supply (UPS) and its applications and use
- duty of care obligations
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type complex control system, controlling a real or simulated process requiring demonstration of operation and responding to problems

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  - may use industry-based simulation for all of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures

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- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS410 Operate remote production facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS410B Monitor remote production facilities

Application

This unit of competency covers the skills and knowledge required to operate and monitor remote process/plant, including production facilities and its associated ancillary equipment and services, from a remote, off-site control system using ground based, satellite or other communications systems. It applies to remote facilities, such as wellheads, separation facilities, utility systems, compressor/pumping stations, treatment stations and satellite processes.

This unit of competency applies to senior technicians or similar roles who are required to apply in depth knowledge of process and plant to in order to operate, monitor and optimise the remote facility, perform tests and isolations, solve process problems and liaise with other plants and facilities.

This unit of competency would typically require the use of a control system, such as a distributed control systems (DCS) or supervisory control and data acquisition (SCADA).

It is not expected that there would be a ‘field operator’ available full time at the remote facility and arranging for one to attend could be part of the role.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for operation of remote facility**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control remote facility hazards
		1.4	Check for recent work undertaken on remote facility
		1.5	Note any outstanding/incomplete work
		1.6	Check operational status of remote facility
		1.7	Liaise with field operator and other personnel responsible for remote facility confirming expected attendance time and work to be performed
2	**Operate the remote facility**	2.1	Monitor the remote facility, its component plant items, utilities and environment frequently and critically throughout shift using measured/ indicated data
		2.2	Describe impacts of any environmental changes and changes upstream and downstream
		2.3	Recognise actual and developing situations which may require action
		2.4	Apply operational knowledge to resolve problems
		2.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		2.6	Follow through items initiated until final resolution has occurred
3	**Recover and measure product**	3.1	Monitor quality and quantity of products and wastes generated

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		3.2	Maximise recovery of product and transfer in accordance with procedures
		3.3	Ensure all waste is treated in accordance with procedures and waste disposed of is within environmental/licence limits
		3.4	Ensure measuring, sampling, testing and data logging is occurring to schedule
4	**Organise required onsite activities**	4.1	Identify job scope and timing of required on-site work from monitored data, job schedules and observations of remote facility operations
		4.2	Arrange for appropriate personnel to attend remote site within the required timeframe
		4.3	Liaise with personnel attending site from their departure for remote site, their activities on remote site and their return to base
		4.4	Check effectiveness of on-site work before personnel leave remote site
5	**Isolate and de-isolate remote facility**	5.1	Arrange to have personnel on site in accordance with procedures
		5.2	Complete any required pre-start checks
		5.3	Start up/shut down remote facility according to the type and duty in liaison with other personnel
		5.4	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		5.5	Isolate entire remote facility and/or any component plant item
		5.6	Make safe for required work
		5.7	Check remote facility/plant item is ready to be returned to service
		5.8	De-isolate and prepare remote facility/plant item for

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return to service

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

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.

Hazards

Hazards include one or more of the following:

- remoteness/single operator
- electricity
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)

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- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

- variations in feed
- contamination of product
- control of temperature and pressure
- variations in waste
- equipment malfunction
- vibration

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action

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- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Remote production facility

This unit of competency includes all such items of equipment and unit operations which form part of the remote production facility, including as appropriate to the facility, one or more of the following:

- valves
- pumps
- prime movers
- compressors
- separators
- instrumentation
- storage tanks, ponds and dams
- filters
- wellheads
- hydraulic well control panels
- fire and gas safety systems

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS410B Monitor remote production facilities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS410 Operate remote production facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS410B Monitor remote production facilities

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 include the ability to:

- interpret and respond to panel messages and alarms
- obtain and interpret data from the control system to minimise variation and maximise performance
- predict impact of a change in one unit/area on other plant units/areas and take action
- apply process knowledge to monitor and predict the need for adjustments to system components
- identify early warning signs of equipment/processes needing attention or with potential problems and take action
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the remote system and the function of each
- remote terminal unit, functions, operation and problems
- nature/condition of materials entering and leaving each stage of the process
- changes which have occurred in that stage and why they have occurred
- methods of changing production rates and the advantages and disadvantages of each
- effect of specific climatic and environmental factors
- process parameters and limits (e.g. temperature, pressure, flow and pH)
- principles of operation of plant/equipment
- physics and chemistry relevant to the process unit and the fluids involved
- local lease and well operations requirements and constraints
- corrective action appropriate to the problem cause
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type remote facilities allowing operation
  - may use industry-based simulation for all of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS411 Manage plant shutdown and restart

Modification History

Release 1. Supersedes and is equivalent to PMAOPS411B Manage plant shutdown and restart

Application

This unit of competency covers the skills and knowledge required to manage the shutdown and restart of a complex and integrated plant. It applies to planned, shutdowns and start-ups, but may also be applied to unplanned and emergency shutdowns (ESD). It does not apply to plant trips.

This unit of competency applies to senior technicians, panel technicians, outside technicians and those in similar roles who are required to apply in-depth knowledge of process and plant to in order to adapt normal practice, within the overall guidelines, to the situation; balance the varying requirements to ensure the shutdown occurs with maximum safety to personnel, plant, the environment and the business's productivity (in that order); and coordinate all personnel involved in the shutdown to ensure it happens in as orderly a fashion as possible and that the plant is left in the best condition possible for a quick restart.

This unit of competency does not apply to individual plant operators shutting down individual production units or following directions during a shutdown; these are included in the unit of competency for operating a particular production unit.

The individual will be liaising and communicating with all internal and external stakeholders.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Manage shutdown sequence**	1.1	Check and verify safety systems to ensure that the unit has been made safe
		1.2	Identify the reason for, or cause of, the shutdown by troubleshooting the system and by utilising all available data and information systems
		1.3	Obtain confirmation of the identified shutdown from field-based operators to verify both the nature and the reliability of the shutdown
		1.4	Rectify or initiate procedures to rectify the fault or shutdown cause through either repair of the operational fault or readjustment before returning the system to start-up status
2	**Conduct start-up process**	2.1	Satisfy all start-up permissives prior to start-up process being commenced
		2.2	Identify hazards and check that hazard controls are operational and effective
		2.3	Conduct start-up according to procedures and in a safe and efficient manner, ensuring a return to steady state operation is achieved
3	**Document shutdown and start-up process**	3.1	Complete all logs and workplace documentation relating to the shutdown/start-up process, ensuring all details, actions and responses are accurately recorded
		3.2	Record any further ongoing production problems and report to appropriate persons or authority

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity

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- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS411B Manage plant shutdown and restart

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS411 Manage plant shutdown and restart

Modification History

Release 1. Supersedes and is equivalent to PMAOPS411B Manage plant shutdown and restart

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 include the ability to:

- interpret and analyse data to decide on type of shutdown required
- plan for efficient shutdown to:
  - cold
  - warm
  - hot
- use data to identify reason for/cause of shutdown and determine action to be taken
- select and apply procedures for planned and unplanned start-up/shutdown
- ensure all safety, permit and system preparations are in place as required for shutdown and start-up
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- shutdown/start-up philosophy and procedures
- correct methods of starting, stopping, operating and controlling process
- emergency shutdown (ESD) procedures
- required state of plant and equipment to allow for a restart
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an industrial plant allowing demonstration of shutdown and restart
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions

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- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS433 Manage wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS433A Manage wells and gathering systems

Application

This unit of competency covers the skills and knowledge required to manage a group of wells and gathering systems so as to optimise the output from all the wells. The management is of the technical aspects of well/system operation, and while this person may also manage well operating personnel, that is not part of this competency.

This unit of competency applies to senior operators, field technicians and those in similar roles who are required to apply in-depth knowledge of process and plant in order to examine data and make and/or recommend changes to optimise the output of the group of wells, prioritise and coordinate the work of the team, and undertake investigations and solve well and operating problems which are beyond the ability of the well operator.

This unit of competency includes all such items of equipment and unit operations which form part of the well/system. A unit comprises two or more components of plant/equipment that are operated together to produce product, including as appropriate to the facility:

- wellheads
- chokes and control valves
- meters
- flow lines
- high point vents
- low point drains
- valves, including non-return and pressure/vacuum relief
- pumps and their prime movers
- product separation units
- instrumentation and control systems (variable speed drive (VSD) and proportional integral derivative (PID))
- testing equipment
- power units
- drive heads
- flares
- fuel gas systems
- chemical injection equipment
- field flares
- storage tanks.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on wells and gathering systems
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of wells and gathering systems
		1.8	Determine appropriate schedule and priorities for work
2	**Operate site, well/system and equipment**	2.1	Complete site checks
		2.2	Use well control systems
		2.3	Take required reading
		2.4	Operate plant.

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		2.5	Start up/shut down well/system
		2.6	Isolate/de-isolate an item of, or an entire well/system
3	**Optimise wells and gathering systems**	3.1	Analyse network
		3.2	Interpret network communication
		3.3	Determine processing plant requirements and the impact of this on well and system operation
		3.4	Investigate status of individual wells
		3.5	Advise well operator of needed adjustments
		3.6	Recommend well stimulation or other required action
		3.7	Ensure flows from wells and systems meet plant and organisation needs
		3.8	Complete logs and reports as required
4	**Prioritise and organise work**	4.1	Ensure required maintenance work has been requested
		4.2	Prioritise maintenance work in liaison with appropriate personnel
		4.3	Organise well shutdowns to suit production requirements where practical
		4.4	Coordinate field operators to ensure their work and priorities match plant and organisation requirements
5	**Solve problems**	5.1	Provide guidance to operators for shutdown/start-up as required
		5.2	Develop the technical problem-solving capability of well operators
		5.3	Analyse data from wells and systems to identify systemic or recurring problems
		5.4	Take action to solve problems

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6	**Finalise shift activities**	6.1	Complete shift tasks as appropriate
		6.2	Ensure identified faults are correctly logged/reported for action
		6.3	Ensure incomplete tasks are scheduled for follow-up
		6.4	Ensure all logs and reporting are complete and understood
		6.5	Check operators have completed required tasks

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

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

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performance criteria and HSE requirements, the HSE requirements take precedence.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

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- leakage
- solids (formation fines)
- vibration
- loss of control of pressure and/or flow
- hydrate formation and blockages
- liquid slugging
- corrosion
- erosion
- sulphate reducing bacteria
- scale formation
- equipment failure
- change in product parameters (e.g. temperature, flow, pressure and level)
- fouling or contamination

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports

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- verbal/radio reports
- reporting items found which require action

Lease maintenance areas requiring action

Lease maintenance areas requiring action include one or more of the following:

- land erosion
- fence and gate integrity
- weeds and other growth
- actions of feral or other fauna
- other required items

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS433A Manage wells and gathering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS433 Manage wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS433A Manage wells and gathering 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, and include the ability to:

- undertake readings and operate and monitor well system
- analyse and interpret network communication and data on individual wells and recommend action to ensure flow meets plant and organisation needs
- perform site checks, start-up/shutdown procedures, and isolations and de-isolations
- interpret fluid level readings and maintain fluid levels
- plan and coordinate the work of the team
- develop the technical problem solving capability of well operators
- identify early warning signs of equipment/processes needing attention or with potential problems
- identify hazards and risks and apply risk control procedures
- communicate effectively with team, group, supervisors and other personnel
- calculate volumetric flow rates and equipment efficiencies.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- oil/gas formation, structure and completions for coal seam gas (CSG), traditional or other oil/gas formations
- coal type and structure or other bedrock structures
- well design and construction
- inter-well communications (e.g. pressure, flow and other technical parameters)
- well status data (e.g. well flows, flow rates, pressure and temperature, downhole conditions and information)
- hydrate formation
- free flow and pumped wells
- pumping principles
- gas flow principles
- gas/water separation principles
- draining and venting requirements
- corrosion control, chemical handling and safety data sheets (SDS)

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- flange pressure and temperature ratings (basic)
- cathodic protection (basic)
- downhole drawings (DHDs) and their application to plant/well operation
- remote terminal unit, functions, operation and problems
- pump, drivehead, fuel gas systems operations and principles
- fluid dynamics and statics as relevant to the system
- reservoir management
- methods of changing production rates and the advantages and disadvantages of each
- water testing and gas break through testing techniques
- local lease and well operations requirements and constraints.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of hydrocarbon wells and gathering systems allowing demonstration of operation
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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).

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- Assessment 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS434 Commission wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS434A Commission wells and gathering systems

Application

This unit of competency covers the skills and knowledge required to commission a well, its gathering system and their associated systems. It applies to operational commissioning which takes place after pre-commissioning of equipment and systems; pre-commissioning is typically performed by a contractor or projects team.

This unit of competency applies to senior operators, field technicians and those in similar roles who are required to apply in-depth knowledge of process and plant to in order to bring a new (or worked over/rejuvenated) well and its gathering system on line, make adjustments to ensure it is in steady operation and delivering at the required rate, balance the impact of the new well on the entire system, and ensure the system is ready to be handed over to a field operator for normal operation.

This unit of competency includes all such items of equipment and unit operations which form part of the well/system. A unit comprises two or more components of plant/equipment that are operated together to produce product, including as appropriate to the facility:

- wellheads
- chokes and control valves
- meters
- flow lines
- high point vents
- low point drains
- valves, including non-return and pressure/vacuum relief
- pumps and their prime movers
- product separation units
- instrumentation and control systems (variable speed drive (VSD) and proportional integral derivative (PID))
- testing equipment
- power units
- drive heads
- flares
- fuel gas systems
- chemical injection equipment
- field flares

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- storage tanks.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check well and its gathering system is ready for commissioning
		1.6	Determine appropriate schedule and priorities for work
2	**Accept handover of well and gathering system**	2.1	Ensure documents and other records provided match 'as is' plant and equipment
		2.2	Check all issues have been satisfactorily resolved
		2.3	Confirm status of individual items being handed over
		2.4	Ensure plant and equipment are operationally sound and in accordance with contract
		2.5	Accept handover when appropriate

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		2.6	Complete logs and reports in accordance with procedures
3	**Commission well in accordance with procedures**	3.1	Commission support systems
		3.2	Commission wellhead and components
		3.3	Make adjustments to bring well to stable operation
4	**Commission gathering system in accordance with procedures**	4.1	Commission support systems
		4.2	Introduce product to gathering system
		4.3	Check all equipment is operating correctly
		4.4	Take action to solve problems
5	**Monitor and adjust well and gathering system to meet production requirements**	5.1	Take required readings
		5.2	Ensure telemetry and controls are functional
		5.3	Adjust downhole pump speed to maintain correct liquid level
		5.4	Monitor nearby wells for impact of new well
		5.5	Complete other site checks
		5.6	Liaise with relevant operational personnel as required
		5.7	Make appropriate adjustments to ensure new well is performing as required
		5.8	Adjust new well and gathering system to balance the overall production to meet requirements
6	**Finalise commissioning activities**	6.1	Complete commissioning tasks as appropriate
		6.2	Ensure identified faults are correctly logged/reported for action
		6.3	Ensure incomplete tasks are scheduled for follow-up

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6.4 Ensure all logs and reporting are complete and understood

6.5 Check all systems are operational and all relevant personnel are informed

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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas

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- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

- leakage
- solids (formation fines)
- vibration
- loss of control of pressure and/or flow
- hydrate formation and blockages
- liquid slugging
- corrosion
- erosion

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- sulphate reducing bacteria
- scale formation
- equipment failure
- change in product parameters (e.g. temperature, flow, pressure and level)
- fouling or contamination

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Support systems and equipment

Support systems and equipment include as appropriate to the well system:

- fuel gas
- lubricating oil
- check valves
- control valves
- remote terminal unit
- telemetry (communications to base)
- control systems
- distributed control systems (DCS) screens
- other systems and equipment

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

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Logs and reports	Logs and reports include one or more of the following: • paper or electronic-based logs and reports • verbal/radio reports • reporting items found which require action

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS434A Commission wells and gathering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS434 Commission wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS434A Commission wells and gathering 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, and include the ability to:

- undertake readings and operate and monitor well system
- analyse and interpret network communication and data on individual wells and recommend action to ensure flow meets plant and organisation needs
- perform site checks, start-up/shutdown procedures, and isolations and de-isolations
- interpret fluid level readings and maintain fluid levels
- plan and coordinate the work of the team
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
  - instrumentation failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - control system failure/malfunction
  - mismatch between flow rates and system requirements
  - wear, tear and corrosion of plant and equipment
  - quality measurement inaccuracy (e.g. analyser or sampling deficiency)
  - systemic/recurring problems
- identify hazards and risks and apply risk control procedures
- calculate volumetric flow rates and equipment efficiencies.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- oil/gas formation, structure and completions for coal seam gas (CSG), traditional or other oil/gas formations
- coal type and structure or other bedrock structures
- well design and construction
- inter-well communications (e.g. pressure, flow and other technical parameters)
- well status data (e.g. well flows, flow rates, pressure and temperature, and downhole conditions and information)

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- hydrate formation
- free flow and pumped wells
- pumping principles
- gas flow principles
- gas/water separation principles
- draining and venting requirements
- corrosion control, chemical handling and safety data sheets (SDS)
- flange pressure and temperature ratings (basic)
- cathodic protection (basic)
- downhole drawings (DHDs) and their application to plant/well operation
- remote terminal unit, functions, operation and problems
- pump, drivehead, fuel gas systems operations and principles
- fluid dynamics and statics as relevant to the system
- reservoir management
- all items on a schematic of the remote system and the function of each
- methods of changing production rates and the advantages and disadvantages of each
- effect of specific climatic and environmental factors
- water testing and gas break through testing techniques
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of hydrocarbon wells and gathering systems allowing demonstration of commissioning
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.

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- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures

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- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS450 Solve colour problems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS450B Solve colour problems

Application

This unit of competency covers the skills and knowledge required to solve colour problems identified by internal and/or external customers. It applies to any colour problem, examples include:

- batches during manufacture do not conform to colour specification
- colour as supplied to customer does not conform
- colour as applied to substrate does not conform
- colour variation within the product
- colour was initially satisfactory but has changed over time.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant in order to gather and analyse data, determine the cause of the problem and recommend a solution to the problem.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Assist customer**	1.1	Clarify customer perception of problem

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	to articulate problem	1.2	Assess opportunities for a targeted response to meet customer needs
		1.3	Identify the rights and responsibilities of the customer and effectively communicate these to the customer
		1.4	Clarify the history of the problem
		1.5	Define problem and complete records
2	**Analyse possible problem causes**	2.1	Examine the colour of the object/surface
		2.2	Compare colour to standard to determine if colour faulty
		2.3	Determine potential causes if colour faulty
		2.4	Analyse history of problem for potential causes
		2.5	Question customer to clarify issues revealed by examination
		2.6	Take samples and arrange for tests as appropriate
		2.7	Determine range of possible causes consistent with data available
		2.8	Determine most likely cause of defined and observed problem
3	**Satisfy customer needs**	3.1	Determine appropriate strategies and activities to resolve problem
		3.2	Negotiate proposed solution with customers and other relevant parties
		3.3	Identify potential areas of difficulty in customer service delivery and take actions to address them
		3.4	Follow items initiated through until final resolution has occurred
		3.5	Meet customer needs within the scope of area of responsibility
		3.6	Report problems outside area of responsibility to designated person

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3.7 Follow procedures where a decision is made to terminate a service

3.8 Complete reports to procedure

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

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.

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

- wrong colourant
- wrong colourant amount
- incorrect processing/mixing/dispersing
- incorrect substrate preparation (e.g. of painted/printed surface)

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- incorrect application (e.g. of paint/ink)
- incorrect colour measurement and testing
- defect standard
- process changes and variations

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS450B Solve colour problems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS450 Solve colour problems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS450B Solve colour problems

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 include the ability to:

- communicate effectively with internal and external customers to obtain all relevant information and negotiate a solution
- isolate the causes of problems and distinguish between causes of colour variations, including:
  - materials errors
  - processing errors
  - faulty surface preparation/application
- discriminate differences in hue, value and chroma (or colour/tone, lightness/shade and saturation)
- recognise colourant addition and colourant dispersion differences
- make judgements based on:
  - perceptibility
  - acceptability/tolerance
  - grade 1, 2 or 3 match as required by specification.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- colour and the interaction of colour components during processing and in application
- impact of weathering/aging on colour as appropriate to the product
- causes and remedies of common colour problems
- communication and negotiation techniques.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of products which may have colour problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS460 Monitor and operate tailings management facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS460A Monitor and operate tailings management facilities

Application

This unit of competency covers the skills and knowledge required to monitor and operate a tailings disposal site.

This unit of competency applies to environmental officers, operators or those in similar roles who are required to apply in-depth knowledge to identify risks (business and environmental), operate equipment to deposit tailings in the tailings management facility (TMF), take measurements and make observations on the integrity of the facility, and take actions to prevent or ameliorate adverse environmental outcomes from the tailings management facility.

This unit of competency applies to early stage metal beneficiation processes, typically associated with aluminium, iron, gold, copper, tin, silver, lead and zinc. The TMF will have deposited material suspended in varying levels of water ranging from slurry (e.g. ‘red mud’), through high slump pastes (e.g. filter cake) to low slump pastes; the focus being sub-aerial deposition (not subaqueous or sea deposition).

However, with appropriate contextualisation the unit of competency may be applied to other types of waste deposited in a TMF, including overburden, slag or other solid waste products from later metalliferous or other processes.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements.
		1.3	Identify and control work health and safety (WHS) hazards and identify risks to the environment
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on TMF
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of TMF and ancillary equipment
		1.8	Coordinate with appropriate personnel, including facility managers and team members
2	**Operate equipment for tailings deposition**	2.1	Access and interpret process waste/tailings management plan and comply with documented processes
		2.2	Identify the type of facility equipment and assess the appropriateness of the equipment given the tailings physical characteristics
		2.3	Measure and report on rate of flow, tailings characteristics and deposition outcomes, as required
		2.4	Set plant to deliver tailings to appropriate location of discharge point according to tailings management plan
		2.5	Complete routine checks, logs and paperwork, taking action on unexpected readings and trends
		2.6	Discharge tailings, as appropriate, based on set rotation sequence for discharges (‘paddocks’) and duration of deposition

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3	**Monitor and control TMF in accordance with procedures**	3.1	Carry out routine plant and facility inspections
		3.2	Check flora and fauna near TMF
		3.3	Check for indications of problems with TMF containment/wall
		3.4	Monitor indicators of location of phreatic zone
		3.5	Check beaching and decant water draw off locations
		3.6	Collect samples and conduct and analyse tests
		3.7	Record observations
		3.8	Compare operational performance against standards established in the tailings management plan
		3.9	Adjust spigots (feed) and decant location (withdrawal) to optimise operation of TMF
		3.10	Report operational condition of the tailings management facility
4	**Recognise problems and take action in accordance with procedures**	4.1	Recognise developing situations which may require action
		4.2	Use water balance principles to determine adequacy of TFM capacity
		4.3	Adjust inflows and outflows (e.g. decant rate and tailings inflow) to respond to potential water imbalance especially overflows
		4.4	Identify and respond to problems arising from dust generated in TMF
		4.5	Report any issues identified with the integrity of the equipment delivering tailings to the TMF
		4.6	Apply the requirements of the emergency management plan in case of significant breaches of TMF integrity (for instance a breach of dam wall).
5	**Isolate and**	5.1	Complete any required pre-start checks

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de-isolate facility	5.2	Start up/shut down TMF plant and equipment according to their type and duty in liaison with other personnel
	5.3	Start up/shut down/changeover component plant items which are part of the TMF according to their type and duty in liaison with other personnel
	5.4	Isolate entire TMF and/or any component plant item
	5.5	Make safe for required work
	5.6	Check TMF/plant item is ready to be returned to service
	5.7	De-isolate and prepare TMF plant unit/plant item for return to service

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed

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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.

Hazards

Hazards include one or more of the following:

- drowning
- breach of TMF containment
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- hazardous products and materials
- unauthorised personnel
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Routine problems

Routine problems are predictable problems with known solutions and include one or more of the following:

- rupture of the tailings slurry delivery pipeline or decant water return pipeline
- rainfall induced erosion of the tailings facility containment wall or water imbalance
- geotechnical failure/excessive deformation of containment wall
- overfilling with tailings beyond management facility capacity, especially the result of unpredicted tailings production or storm event
- seepage of hazardous materials through the dam wall or through the foundation into the groundwater

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- migration of the phreatic zone so as to emerge from the face of the dam wall
- dust emissions especially of toxic materials
- uncontained floodwater in high rainfall areas

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Action

Action in accordance with procedures includes one or more of the following:

- positioning of the decant pond, damp or seepage at the dam wall, status of leak detection systems, any unusual vegetation or wildlife occurrences, tailings surface status, and integrity of the dam wall
- recording piezometer readings on water pressure, groundwater quality, seepage and leakage rates through notch weirs, settlement and displacement survey measurements of dam walls
- calculating water balance based on measures of inflow (with tailings, rainfall, catchment run-off, and so on), and storage and outflow (seepage, water reclaim, evaporation, and so on)
- responding to dust issues by spraying with chemical dust suppressants,

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covering the tailings with gravel, setting up silt trap fences or changing the tailings water ratio to maximise the wetted surface
- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem-solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

Tailings/waste characteristics

Tailings/waste characteristics include the following:

- mineralogy: residual resource potential, and plant nutrients
- chemical reactivity: toxicity, leachate potential, acid producing potential, spontaneous combustion, cementation/hydration and weathering
- physical characteristics: particle size distribution, particle density compressibility, shear strength, liquefaction potential, erodibility and dusting potential
- placement characteristics: placed dry density, particle sorting, permeability, bearing capacity and initial placement density
- handling characteristics: solids content of slurries, trafficability during placement, flocculation/settling time and abrasiveness.

Tailings disposal strategy

Tailings disposal strategy includes one or more of the following:

- use/operating of equipment, such as pipes, pumps, conveyor belts, pipeline delivering tailings to management facility (leaks, blockages) and associated equipment (for instance centrifugal or positive displacement pumps)
- the location of discharge points
- the rotation sequence for discharges
- the duration of deposition in an area
- the location of settling ponds and decant facilities
- the location and timing of intermediate paddock bunding
- the likely landform created by the deposition processes at stages throughout operations up to and including final landform
- flowable volumes and potential flow paths
- operational maintenance requirements (e.g. dust suppression, fauna exclusion and drainage)

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Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS460A Monitor and operate tailings management facilities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS460 Monitor and operate tailings management facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS460A Monitor and operate tailings management facilities

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 include the ability to:

- conduct checks/tests to measure tailings management facility (TMF) performance, including water quality, dam wall movement, water pressure and water flow
- interpret outcome measures from tests performed
- identify early warning signs of equipment/processes needing attention or with potential problems
- implement emergency management plan
- identify environmental risks and take appropriate action
- operate and monitor deposition and decant equipment.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and characteristics of site-specific tailings
- design of tailings management facilities and impact on environmental risk
- methods of tailings disposal and deposition and associated equipment
- environmental risk and environmental management
- water balance and related issues
- principles of operation of pumps under conditions of different tailings consistency and water percentage
- principles of operation of conveyor belts under conditions of different tailings consistency and water percentage
- process parameters and limits of tailings disposal plant (e.g. pressure, flow and pH)
- typical issues causing problems (plant/equipment, process, environmental) and the resolution of those problems
- relevant environmental and heritage requirements
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type TMF allowing operation and checking
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS500 Optimise production systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS500A Optimise production systems

Application

This unit of competency covers the skills and knowledge required to analyse and optimise complex operating production systems. It applies to discrete projects which aim to resolve identified production problems, such as a need for improved quality, reduced variability, higher yields, less waste or better control.

This unit of competency is applicable to the optimisation of an entire plant, or for large sites, an entire process system within the site.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to gather historical plant operating or product quality data, review the data for trends or dependencies, investigate cause and effect responses, develop a solution/improvement and take action to ensure that the improvement is implemented and effective.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify process**	1.1	Review process or plant performance to determine likely

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	or system for review		areas of improvement
		1.2	Gather data on the process or system design
		1.3	Design the data collection system for the required data
2	**Collect and analyse data**	2.1	Collect or review available data from the process or plant
		2.2	Analyse the data for trends or dependencies
		2.3	Postulate possible cause and effect scenarios
3	**Develop tests or trials**	3.1	Propose controlled tests or trials to review the plant or process patterns
		3.2	Discuss possible solutions to cause with relevant people
		3.3	Arrange for required tests or controls to be undertaken in appropriate timeframe
		3.4	Collect further data from tests or trials
		3.5	Review plant or process data and compare with original data
		3.6	Prepare further tests or trials as required, or until possible solutions are developed
4	**Develop improvement solution**	4.1	Agree required improvement solution with appropriate people
		4.2	Arrange for required improvement solution to be undertaken in appropriate timeframe
		4.3	Follow items initiated through until final resolution has occurred
		4.4	Check effectiveness of solution and take action
		4.5	Complete reports to procedure

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments

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subjected to heat, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS500A Optimise production systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS500 Optimise production systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS500A Optimise production 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, and include the ability to:

- analyse and interpret schematics, technical information, performance data and operational practices
- design and apply data collection system
- apply problem isolation and problem-solving techniques to multi-variable processes
- develop solutions/improvements
- evaluate effectiveness of solutions/improvements
- communicate and negotiate effectively with internal and external stakeholders
- complete written/electronic records
- perform complex calculations.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- plant equipment, its characteristics and limitations
- process chemistry, physics and biochemistry as relevant (e.g. to the extent of writing chemical equations and identifying factors controlling reaction rate and yield or equivalent, or determining mass or heat transfer rates for a process)
- problem isolation techniques
- problem analysis techniques
- systems operating parameters, system integrity limits, product specifications and tolerances
- principles of operation of plant/equipment
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.
  -

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.
-

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS501 Provide operational expertise to a project team

Modification History

Release 1. Supersedes and is equivalent to PMAOPS501A Provide operational expertise to a project team

Application

This unit of competency covers the skills and knowledge required to provide operational expertise to a project team. It applies to discrete projects for new facility, expansion or other major works.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to review project design for safety and operability considerations, provide advice on the operational requirements and implications of the project, and prepare operator training materials and operation procedures.

The provision of operations expertise to a project team provides a critical, practical link to the operational requirements of the planned works. Project teams usually comprise engineers with various technical specialisations (e.g. process, mechanical, electrical and control,) and project managers.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Identify operational requirements for the project**	1.1	Review initial design specifications for project
		1.2	Analyse proposed requirements, including operational requirements, manning levels and expertise required for the proposed works
		1.3	Document operation review as required by the project
2	**Review design**	2.1	Review design for operational safety of proposed works
		2.2	Contribute operational expertise to systematic safety review process as part of the project team
		2.3	Review instrumentation and controls for operability
		2.4	Review control sequences and control screen layouts for operability considerations
		2.5	Document operability reviews of design as required by the project
3	**Develop procedures and training to meet project needs**	3.1	Develop procedures for commissioning and/or operations
		3.2	Develop training materials for operators based on design information
		3.3	Review operator training and procedures with project design team
		3.4	Document procedures, training and reviews as required by the project

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.

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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

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.

Hazards

Hazards include one or more of the following:

- operability and related ergonomic issues
- electricity
- gases and liquids under pressure
- structural hazards
- equipment failures
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form,

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include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS501A Provide operational expertise to a project team

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS501 Provide operational expertise to a project team

Modification History

Release 1. Supersedes and is equivalent to PMAOPS501A Provide operational expertise to a project team

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 include the ability to:

- analyse and interpret schematics, technical information, performance data and operational practices
- review project designs for safety and operability issues
- communicate and negotiate effectively with internal and external stakeholders
- clearly convey complex/technical information in writing
- use language, structures and formats that are appropriate to information needs, the reader and organisation requirements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- plant equipment, its characteristics and limitations
- impact of variations in plant/process and the distinctive signs of each variation
- process chemistry, physics and biochemistry as relevant (e.g. to the extent of writing chemical equations and identifying factors controlling reaction rate and yield or equivalent, or determining mass or heat transfer rates for a process)
- organisational operating procedures and training materials
- safety review procedures and techniques (e.g. hazard and operability study (HAZOP))
- systems operating parameters, system integrity limits, product specifications and tolerances
- process control philosophies and strategies
- principles of operation of plant/equipment
- hierarchy of control
- hazards that may arise in the job/work environment. and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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PMAOPS505 Control the process during abnormal situations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS505A Control the process during abnormal situations

Application

This unit of competency covers the skills and knowledge required to control a process during abnormal or declared incident situations to prevent or avoid an emergency and restore the plant/process to a stable condition.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to clarify the situation, prioritise the responses and actions, organise and direct the operations team, review the situation and respond to any changes, and communicate with all relevant stakeholders.

This person may, or may not be ‘hands on’ with the control panel during this abnormal situation, but will take control and direct the response to the abnormal situation. The person will often be a shift supervisor or similar.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Identify the abnormal situation**	1.1	Identify the state of the plant/process
		1.2	Gather available information on the plant/process with particular focus on trends and rates of change
		1.3	Verify and confirm situation with other technicians in the area and any upstream or downstream units
2	**Respond appropriately**	2.1	Apply immediate actions to respond to the abnormal situation to bring the plant/process to a safer state
		2.2	Decide whether to continue operations, shutdown or abandon
		2.3	Keep in contact with other technicians in the area
3	**Review and respond to changes**	3.1	Review the situation, gather data on the state of the plant/process and the trends and rates of change
		3.2	Make changes to the state of the plant/process to keep parameters within limits
		3.3	Rectify or initiate procedures to rectify any faults or adjustments to secure the safe operation of the plant/process
		3.4	Review the state of the recovery, making adjustments as required
		3.5	Keep all other stakeholders informed of progress
		3.6	When plant is restored to stable conditions, continue to monitor the situation
4	**Document abnormal situation and response**	4.1	Complete all logs and workplace documentation relating to the abnormal situation, ensuring all details, actions and responses are accurately recorded
		4.2	Record any further ongoing production problems and report to appropriate persons or authority

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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

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas clouds
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to smoke, darkness, heat, dust, vapours or other atmospheric

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hazards
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS505A Control the process during abnormal situations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS505 Control the process during abnormal situations

Modification History

Release 1. Supersedes and is equivalent to PMAOPS505A Control the process during abnormal situations

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 include the ability to:

- analyse and interpret schematics, technical information, performance data and operational practices
- determine and initiate any immediate corrective action (quick fix) required
- communicate effectively with internal and external stakeholders under stress
- analyse rapidly changing and possibly confusing data to determine best course of action
- monitor and adjust actions and directions to other personnel to meet changing conditions
- identify and resolve problems
- lead and direct operational team.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation of plant/equipment, its characteristics and limitations
- impact of variations in plant/process and the distinctive signs of each variation
- process chemistry, physics and biochemistry and its application to abnormal situations
- problem isolation techniques
- problem analysis techniques
- systems operating parameters, system integrity limits, process control philosophies and strategies, product specifications and tolerances
- hierarchy of control
- hazards that may arise in the job/work environment, and:
- their possible causes
- potential consequences
- appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of industrial type plant and situations allowing identification and review of abnormal situations
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMAOPS511 Determine energy transfer loads

Modification History

Release 1. Supersedes and is equivalent to PMAOPS511B Determine energy transfer loads

Application

This unit of competency covers the skills and knowledge required to determine energy transfer loads. It applies to activities which aim to resolve identified plant or process problems, such as ensuring that systems are adequate for the load, improving heat/cooling efficiency or specification of new or modified equipment.

This unit of competency applies to any heat transfer mode, including conduction, convection (forced and natural), radiation, and combined conduction/convection/ radiation. It applies to sources of heating/cooling, such as:

- chemical reaction (including combustion)
- water cooling
- air cooling
- steam heating (calculations for saturated steam only)
- evaporative cooling
- hot fluid (e.g. oil) heating.

This unit of competency applies to senior technicians or those in similar roles who are required to calculate heat transfer and temperature change for a plant item/plant area in order to determine heating/cooling load or efficiency or losses from/gains to the system. This may be done as a step to improve efficiency, for plant/process design/improvement or other reasons.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for energy balance**	1.1	Identify purpose of energy balance
		1.2	Determine possible boundary for analysis
		1.3	Identify plant and energy sources and sinks within boundary
2	**Calculate heat transferred from/to items**	2.1	Calculate conductive heat transfer to/from an object
		2.2	Calculate convective heat transfer to/from an object
		2.3	Calculate radiative heat transfer to/from an object
		2.4	Calculate combined heat transfer to/from an object, including resistances in series and parallel
3	**Calculate temperature change**	3.1	Calculate temperature change caused by heating/cooling of process materials in typical examples of processing equipment
		3.2	Calculate change in heat content caused by chemical reaction
		3.3	Calculate temperature rise caused by chemical reaction
4	**Select appropriate heating and/or cooling mechanism for an application**	4.1	Compare rates of heat transfer/overall heat transfer coefficients for major methods/media of heating and cooling
		4.2	Determine appropriate methods of varying/controlling rates of heat transfer
		4.3	Calculate heat transfer rates under a range of conditions
		4.4	Recommend most appropriate heat transfer mechanism/medium for this application

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5	**Conduct energy balance over process components**	5.1	Determine desired boundaries for energy balance calculation
		5.2	Determine possible sources of data required from the plant
		5.3	Match and adjust sources of data to desired boundary for energy balance
		5.4	Determine overall heating load
		5.5	Determine overall cooling load
		5.6	Interpret results to meet purpose of the energy balance

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

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

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS511B Determine energy transfer loads

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS511 Determine energy transfer loads

Modification History

Release 1. Supersedes and is equivalent to PMAOPS511B Determine energy transfer loads

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 include the ability to:

- determine the boundaries of the system to be studied
- collect the required plant data from measurements, readings or calculated quantities
- calculate the energy transfer loads
- calculate change in heat content from exothermic/endothermic reactions relevant to the plant
- conduct energy balances
- report the results as required by the purpose of the energy balance.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- conduction, convection and radiation
- thermal properties of materials, particularly process materials
- methods of heating process materials
- cooling systems
- energy balances
- relevant process specific science.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.

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- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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PMAOPS512 Determine mass transfer loads

Modification History

Release 1. Supersedes and is equivalent to PMAOPS512B Determine mass transfer loads

Application

This unit of competency covers the skills and knowledge required to determine mass transfer loads and flow rates. 'Flow rate' and similar terms refer to the flow rate in terms of kg/h, or kg/batch or similar conceptual flows.

This unit of competency applies to activities which aim to resolve identified plant or process problems, such as improving materials efficiency or specification of new or modified equipment.

This unit of competency applies to any mass transfer mode, including

- mass flow
- density variations with changes in temperature (and pressure where appropriate)
- simple (physical) mixing
- simple (physical) separation
- changes in component mass flow rates due to chemical reaction (including mixing and separation using chemical reaction).

This unit of competency applies to senior technicians or those in similar roles who are required to calculate mass transfer and change in mass contained for a plant item/plant area in order to determine mass transfer efficiency or losses from/gains to the system. It may require the determination of the yield from a chemical reaction. This may be done as a step to improve efficiency, for plant/process design/improvement or other reasons.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for mass balance**	1.1	Identify purpose of mass balance
		1.2	Determine possible boundary for analysis
		1.3	Identify plant and mass sources and sinks within boundary
2	**Calculate mass flow rates of streams**	2.1	Calculate mass flow rate of plant streams from volumetric data, correcting for changes in density
		2.2	Calculate mass flow rate of individual components of plant streams from their concentrations
		2.3	Calculate mass accumulation (+ or -) within a plant item
3	**Calculate mass change due to a chemical reaction**	3.1	Determine yield from reaction of all significant products
		3.2	Determine mass output of all significant products arising from the reaction for specified reactant inputs
4	**Conduct mass balance over process components**	4.1	Determine desired boundaries for mass balance calculation
		4.2	Determine possible sources of data required from the plant
		4.3	Match and adjust sources of data to desired boundary for mass balance
		4.4	Determine overall mass balance
		4.5	Determine mass balance for each significant component/ reactant and product
		4.6	Interpret results to meet purpose of the mass balance

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS(
- formulas/recipes
- batch sheets
- temporary instructions

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- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS512B Determine mass transfer loads

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS512 Determine mass transfer loads

Modification History

Release 1. Supersedes and is equivalent to PMAOPS512B Determine mass transfer loads

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 include the ability to:

- determine the boundaries of the system to be studied
- collect the required plant data from measurements, readings or calculated quantities
- calculate the mass transfer loads
- conduct mass balances
- report the results as required by the purpose of the mass balance.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- stoichiometry of chemical reactions
- changes in density with temperature (and pressure where appropriate)
- mass balances
- plant equipment, its characteristics and limitations
- process-specific science.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.

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- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS520 Manage utilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS520C Manage utilities

Application

This unit of competency covers the skills and knowledge required to manage utilities used by a whole site or group of plants in order to improve the efficiency of usage. It applies to utilities, such as:

- steam (saturated and/or superheated)
- air (instrument, safety, process and/or mechanical)
- water (cooling and/or process)
- fuel (gas and oil)
- other heating/cooling mediums (oil, 'Dowtherm' and brine)
- electricity
- other reticulated utilities.

The utilities will typically be centrally produced and/or controlled.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to determine utilities requirements and actual consumption, compare actual to theoretical consumption, and initiate actions which will lead to a more efficient use of these utilities.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify source and use of all utilities on plant**	1.1	Obtain current services diagram or schematic for plant
		1.2	Identify all items of equipment using utilities
		1.3	Identify source of each utility
		1.4	Identify utility properties (e.g. pressure, voltage, current) as supplied
		1.5	Determine required utility properties (e.g. from engineering specification) for each item of equipment using each utility
2	**Determine actual consumption of utilities**	2.1	Get information showing consumption of utilities by the plant and plant equipment
		2.2	Get information showing actual utility properties as used by each plant item
		2.3	Physically check each item of equipment for signs of inefficient utility use (e.g. faulty steam traps and leaks)
		2.4	Compile report/database showing actual usage of utilities and observed problems
3	**Determine efficiency of use**	3.1	Determine theoretical consumption of utilities for equipment items from engineering specifications, by calculation or other methods
		3.2	Compare actual consumption of utilities with theoretical consumption
		3.3	Determine inefficient users of utilities
		3.4	Compile report/database showing efficiency of use of utilities

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4	**Take required action to improve utility efficiency**	4.1	Rank inefficient users in priority order for remediation based on costs and business requirements
		4.2	Investigate and determine causes of inefficiency in the higher ranked users
		4.3	Develop plans to remove the causes of inefficiency
		4.4	Identify any health, safety and environmental (HSE) implications of planned actions and address prior to any implementation of changes
		4.5	Consult with relevant stakeholders regarding HSE implications and the implementation of these plans
		4.6	Initiate appropriate action for items within scope of authority
		4.7	Follow through on items to facilitate a timely completion
		4.8	Report/make recommendations on required improvements which are beyond scope of authority to action

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

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- Australian and other standards
- licence and certification requirements

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.

Hazards Hazards include one or more of the following:

- heat
- electricity
- fluids under pressure
- plant services (steam, condensate and cooling water)
- flammability and explosivity
- hazardous products and materials
- unauthorised usage
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS520C Manage utilities

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS520 Manage utilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS520C Manage utilities

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 include the ability to:

- analyse and interpret schematics, technical information, performance data and operational practices to determine actual and theoretical consumption of utilities for the site/plant being examined
- isolate the causes of problems and to be able to distinguish between causes of problems/alarm/fault indications, such as:
  - poor/inappropriate quality supply of utility
  - equipment failure (e.g. faulty steam trap and fouled heat exchanger)
  - operational problem (inappropriate usage pattern of utility)
- set priorities for action that take into consideration factors, including plant key performance indicators, health, safety and environmental (HSE) implications, the hierarchy of control, options for simple/quick solutions versus those requiring a capital project and other relevant business factors
- develop plans to improve utility efficiency
- communicate and consult effectively with internal and external stakeholders.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- methods for calculating theoretical consumption
- plant equipment, its characteristics and limitations
- problem isolation techniques
- problem analysis techniques
- usage of utilities by plants and equipment
- requirements for utilities, properties, usage patterns and supply
- typical causes of inefficiencies at the plant or equipment and possible solutions
- systems operating parameters and system integrity limits.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:

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  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- It is not necessary for the recommended improvements in utility efficiency to be complete for the purposes of this unit.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment

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- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMAOPS521 Plan plant shutdown

Modification History

Release 1. Supersedes and is equivalent to PMAOPS521C Plan plant shutdown

Application

This unit of competency covers the skills and knowledge required to develop a detailed plan for a planned, major shutdown.

A planned, major shutdown may be for whole plant/system, one plant area or one plant in an integrated complex and will typically occur to enable:

- regulatory vessel inspection (PVI)
- major maintenance
- upgrades or refits
- catalyst and/or column repacking
- other activities which are scheduled for the shutdown.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to identify the type and purpose of the shutdown, identify required tasks and critical path, plan and schedule tasks, and monitor the shutdown against the plan.

Shutdown planning is usually a team activity and so this technician would also be working with technical (process) experts, maintenance experts, contractor representatives, and liaising with production and other management.

Generally this would be a seconded role of a senior plant technician who for the period of the shutdown, and for a significant period before the shutdown, would undertake this as their primary activity.

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

Pre-requisite Unit

Nil

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Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify maintenance/ project and plant requirements**	1.1	Analyse relevant company records to determine activities which have been scheduled for the shutdown
		1.2	Obtain information on maintenance activities intended for the shutdown.
		1.3	Obtain information on production activities intended for the shutdown
		1.4	Obtain information on projects or construction activities intended for the shutdown
		1.5	Compile a list of all activities intended for the shutdown, including sufficient detail to allow for shutdown planning
		1.6	Negotiate conflicts between proposed activities
2	**Identify tasks, timelines and resources**	2.1	Break down each agreed shutdown activity into required tasks
		2.2	Determine time, people, material, other resources required and 'owner' for each task
		2.3	Determine prerequisite tasks for each task
		2.4	Identify conflicts between tasks arising from resources or other causes
		2.5	Negotiate conflicts between tasks
		2.6	Compile database of all tasks and their requirements

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3	**Develop schedule**	3.1	Develop draft shutdown schedule, including planning activities
		3.2	Determine critical path or similar for shutdown tasks
		3.3	Analyse tasks on critical path to determine methods of reducing critical path
		3.4	Develop revised schedule
		3.5	Consult with all relevant stakeholders and analyse revised schedule for conflicts and possible savings
		3.6	Negotiate conflicts
		3.7	Develop final schedule and critical path or similar
4	**Communicate with all relevant stakeholders**	4.1	Contribute to shutdown planning meetings with stakeholders
		4.2	Meet with stakeholders individually
		4.3	Prepare reports and documents as required
		4.4	Ensure all permissions required for tasks have been obtained
		4.5	Liaise with suppliers and contractors to obtain parts, materials and services
5	**Monitor shutdown**	5.1	Establish systems to allow monitoring of shutdown to schedule
		5.2	Monitor progress to schedule
		5.3	Identify causes of not meeting schedule
		5.4	Negotiate a solution to cause
		5.5	Adjust schedule to meet changed circumstances but still meet overall timeline (if at all possible)

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Scheduling Scheduling may be electronic or paper-based and include at least one more of the following:

- electronic databases, such as Access, DB and Oracle
- project management software (e.g. Project, Gantt charts, critical path method (CPM) and programmed evaluation and review technique (PERT))
- other electronic forms, such as spreadsheets
- card files
- other paper-based systems
- other specialised planning software
- paper techniques

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS521C Plan plant shutdown

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS521 Plan plant shutdown

Modification History

Release 1. Supersedes and is equivalent to PMAOPS521C Plan plant shutdown

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 include the ability to:

- identify all necessary activities, tasks and logical sequences to ensure safe and efficient shutdown
- communicate and negotiate effectively with technical (process) experts, maintenance experts, contractor representatives, production management and other stakeholders to obtain the best outcome for the shutdown from competing priorities
- use planning tools to develop, modify and optimise complex plans/schedules
- breakdown work tasks into steps/stages/trades/contractors/ parts/designs/spares/tools
- monitor shutdown against plan and re-schedule/ adjust/update plans as required.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- methods of task breakdown
- critical path (or similar) technique
- project scheduling techniques
- correct methods of shutting down plant items.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.

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- Assessment should use a real project in an operational workplace. Where this is not possible or practical, or where it is desirable to test for competence before taking a major role in a shutdown, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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PMAOPS522 Coordinate plant shutdown

Modification History

Release 1. Supersedes and is equivalent to PMAOPS522A Coordinate plant shut down

Application

This unit of competency covers the skills and knowledge required to coordinate a planned, major shutdown.

A planned, major shutdown may be for whole plant/system, one plant area or one plant in an integrated complex and will typically occur to enable:

- regulatory vessel inspection (PVI)
- major maintenance
- upgrades or refits
- catalyst and/or column repacking
- other activities which are scheduled for the shutdown.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to coordinate shutdown sequence to ensure all process shutdown activities completed to schedule, coordinate the activities of a number of work groups, analyse/problem solve and develop contingency plans, and identify and coordinate resources and pre-shutdown requirements.

This unit of competency applies to a plant technician who is performing the plant shutdown coordinator role as their primary activity. This technician would be part of a team working with technical experts, maintenance experts, contractor representatives, process/production teams and management.

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify shutdown work scope**	1.1	Analyse relevant information for activities intended for the shutdown
		1.2	Determine all activities intended for shutdown
		1.3	Confirm priorities and identify all essential work
		1.4	Resolve conflicts between proposed activities
2	**Plan and schedule resources**	2.1	Identify each individual task in the shutdown process
		2.2	Determine resources required for each task and assign appropriate owner
		2.3	Determine prerequisite tasks prior to shutting down process
		2.4	Ensure hazards are identified and controls are in place
		2.5	Ensure all safety and testing equipment is calibrated and on site prior to shutdown commencing
		2.6	Compile a schedule to track shutdown and equipment preparation sequence
3	**Coordinate plant/ equipment shutdown sequence**	3.1	Prepare/review shutdown documentation
		3.2	Coordinate plant shutdown according to procedures
		3.3	Track plant shutdown progress
		3.4	Coordinate execution of critical function test during shutdown phase
		3.5	Coordinate equipment preparation
		3.6	Validate equipment is safe to hand over to appropriate

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			work party
4	**Hand over plant/ equipment to relevant work party**	4.1	Hand over plant and equipment to relevant work group according to site protocol
		4.2	Perform safety audits during shutdown work
		4.3	Record/report health, safety and environment (HSE) non-conformance
		4.4	Communicate as and when required
		4.5	Monitor shutdown work against critical path
		4.6	Monitor resource usage and take action
		4.7	Identify barriers to achieving shutdown critical path and negotiate solution
5	**Communicate with all relevant stakeholders**	5.1	Communicate shutdown plan/schedule to operations team
		5.2	Attend and contribute to regular shutdown progress meetings
		5.3	Record and report daily shutdown activities
		5.4	Ensure all authorisations required for tasks have been obtained
		5.5	Identify, communicate and mange HSE issues arising during execution of shutdown activities
		5.6	Contribute to post shutdown review
6	**Return plant to service**	6.1	Confirm that all scheduled work on equipment is complete before hand back is accepted
		6.2	Ensure equipment hand back documentation complete according to site protocol
		6.3	Coordinate pre-start equipment integrity checks
		6.4	Coordinate and validate plant de-isolation and

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preparation for service

6.5 Ensure appropriate plant start-up authority is obtained

6.6 Coordinate start-up critical function tests as required

6.7 Coordinate and record plant start-up progress

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

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,

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include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Scheduling Scheduling may be electronic or paper-based and include at least one more of the following:

- electronic databases, such as Access, DB, and Oracle
- project management software (e.g. Project, Gantt charts, critical path method (CPM) and programmed evaluation and review technique (PERT))
- other electronic forms, such as spreadsheets
- card files
- other paper-based systems
- other specialised planning software
- paper techniques

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS522A Coordinate plant shut down

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS522 Coordinate plant shutdown

Modification History

Release 1. Supersedes and is equivalent to PMAOPS522A Coordinate plant shut down

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 include the ability to:

- lead and coordinate shutdown team to ensure safe and efficient plant shutdown and preparation according to procedures without incident
- record and report all aspects of shutdown activities to stakeholders according to enterprise protocol
- communicate and negotiate effectively with technical (process) experts, maintenance experts, contractor representatives, production management and other stakeholders to obtain the best outcome for the shutdown from competing priorities
- determine resource requirements, including:
  - utility services, such as steam, nitrogen, power, water and chemicals
  - workforce, such as operators, maintenance, contractors, engineers, laboratory staff, safety observer and standby rescue crew
  - mobile equipment, such as elevated work platforms, Hiab, vacuum trucks and drip trays
  - other equipment, such as hoses, plugs and caps, scaffold and extra fire protection equipment.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- interpretation of project planning tools being used
- a comprehensive knowledge of plant shutdown events and their impact on upstream and downstream interfaces
- plant/equipment/processes impacted by the shutdown
- safe working practices related to the type of plant and equipment being shut down and worked on
- correct methods of shutting down plant items
- organisation procedures.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.

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- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment

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- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS550 Develop a colour formulation

Modification History

Release 1. Supersedes and is equivalent to PMAOPS550B Develop a colour formulation

Application

This unit of competency covers the skills and knowledge required to develop a new colour formulation from scratch to match a provided colour sample or description of customer requirements. It applies to new colour formulations for existing and/or new products and the use of computer and visual colour matching. The formulation would normally use colourants already available within the company (preferred colourants), but does not preclude the use of colourants which are novel/new to the company.

This unit of competency applies to any industry sector requiring the development of a new colour formulation for its products. Examples of products include:

- paint
- ink
- plastics
- rubber
- concrete products
- glass products
- clay/ceramic products.

This unit of competency applies to technologists or those in similar roles who are required to confirm design specifications, identify and resolve potential manufacturing problems, undertake and analyse production trials, and make modifications to achieve suitable formulation and production process.

This unit of competency applies to an individual who is part of a team for the total development of a new product, but may develop the colour formulation for a new colour for an existing product independently. The technologist would liaise with relevant production and other personnel for production trials.

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

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Pre-requisite Unit

PMAOPS350 Match and adjust colour

PMAOPS450 Solve colour problems

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Confirm design brief of new colour**	1.1	Communicate with customer and other key stakeholders and agree on design specifications
		1.2	Determine end use of product (e.g. interior, exterior, automotive, industrial or decorative)
		1.3	Develop and validate design brief to meet needs
2	**Determine initial colour formulation**	2.1	Analyse colour sample (where provided) using colour computer and/or eye and predict possible colour formulation
		2.2	Compare predicted formulation with company/customer preferred colourants
		2.3	Adjust predicted formulation to use preferred colourants
		2.4	Check that the adjusted formulation complies with design brief
3	**Conduct small scale trials**	3.1	Make/arrange for small batch to adjusted formulation
		3.2	Undertake trials to determine optimum processing conditions, where relevant

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		3.3	Analyse colour of sample product, compare to design brief and determine variation to desired colour
		3.4	Modify formulation and processing, where relevant, to have simplicity of manufacture and to meet brief
4	**Assess hazards**	4.1	Identify hazards arising from colour formulation and processing
		4.2	Assess risks arising from those hazards
		4.3	Determine action to control risks in accordance with hierarchy of control and duty of care
		4.4	Take required action before proceeding to trial
5	**Trial new colour formulation through the process**	5.1	Design trial to procedure to deliver required information
		5.2	Ensure work health and safety (WHS) and environmental requirements are stringently observed
		5.3	Coordinate the trialling of the new product
		5.4	Interpret colour trial results, determine variation to desired colour and guide colour trial process
		5.5	Adjust formulation, and if appropriate tune process, to optimise production of new colour
6	**Coordinate evaluation and testing**	6.1	Determine colour testing and evaluation regime required to meet end use requirements, including regulatory/industry code requirements
		6.2	Arrange for testing and evaluation of trial colour
		6.3	Interpret colour trial results and determine variation to desired colour
		6.4	Modify formulation and conduct new trials as required
		6.5	Determine final formulation and processing specifications

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7	**Implement procedures for new colour**	7.1	Monitor initial production and adjust process, conditions and formulation to make the process a smooth operation
		7.2	Ensure process specifications reflect the optimised operation developed
		7.3	Ensure quality standards and procedures meet requirements of design brief
		7.4	Ensure procedures are correct for the new colour
		7.5	Ensure project records are complete and all required reports have been completed and submitted
		7.6	Archive records according to procedure

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

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through

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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

Hazards

Hazards include one or more of the following:

- toxicity
- dust or vapours
- flammability and explosivity
- hazardous products and materials
- other hazards identified on safety data sheets (SDS)

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Design specifications

Design specifications include the following:

- colour /colour specification
- surface finish/gloss
- viewing conditions (lighting)
- opacity
- requirements for metameric/non-metameric match
- other aesthetic requirements

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS550B Develop a colour formulation

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS550 Develop a colour formulation

Modification History

Release 1. Supersedes and is equivalent to PMAOPS550B Develop a colour formulation

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 include the ability to:

- communicate effectively with internal and external customers
- confirm end use of product and design specifications
- determine formulations and/or make adjustments to computer suggested formulation to meet specifications, company conditions and standard materials/colourants
- undertake production trials and analyse results
- isolate the causes of variation to desired colour and distinguish between causes of problems, such as:
  - wrong colourant
  - wrong colourant amount
  - wrong grind time/particle size
  - wrong wetting/dispersing
  - differing lighting conditions
  - variable surface finish/gloss level
  - non-metameric matching issues
  - process caused colour differences
- identify and resolve problems
- interpret weathering and other test data
- make both metameric and non-metameric matches
- determine the hazards arising from the colourants chosen.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- typical problems and possible solutions
- the 'flare path' on a tonal graph of tone vs time
- optimum grind/particle size for required colour
- balance gloss, opacity and tone
- interaction of colourants and impacts of processing variables on the final colour
- regulatory framework
- hazards that may arise in the job/work environment, and:

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- their possible causes
- potential consequences
- appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions

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- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS560 Plan and design tailings management facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS560A Plan and design tailings management facilities

Application

This unit of competency covers the skills and knowledge required to plan and design tailings management facilities (TMF). It applies where the activities of a metals, minerals or other processing plant produces waste in the form of tailings (e.g. slag and slurry) or wastewater.

This unit of competency applies to health, safety and environment (HSE) managers/officers, frontline managers, site managers/officers or those in similar roles who are required to develop risk identification and management strategies (business and environmental) and scope and design tailings disposal management systems and facilities.

This unit of competency applies to a person who has the responsibility for the planning and design of a company's tailings waste management system or the planning and design of tailings-specific disposal sites from the early stage metalliferous processes. This would include the planning and design of an environmental management system focused on continual improvement to review, prevent, mitigate or ameliorate adverse environmental impacts and which will provide for the safe storage and disposal of residual wastes and process residues.

This unit of competency applies to early stage metal beneficiation processes, typically associated with aluminium, iron, gold, copper, tin, silver, lead and zinc, and similar processes. The TMF will have deposited material suspended in varying levels of water ranging from slurry (e.g. 'red mud'), through high slump pastes (e.g. filter cake) to low slump pastes; the focus being sub-aerial deposition (not subaqueous or sea deposition).

However, with appropriate contextualisation this unit of competency may be applied to other types of waste deposited in a TMF, including overburden, slag or other solid waste products from later metalliferous processes.

No occupational licensing or certification requirements apply to this unit at the time of publication.

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Some jurisdictions may define requirements for tailings storage facility design, construction and ongoing management. Users should check with the relevant authorities and adhere to any such requirements.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Identify work requirements
		1.2	Identify and control work health and safety (WHS) hazards and identify risks to the environment
		1.3	Coordinate with appropriate personnel, including facility managers and team members
2	**Research waste/tailings management requirements**	2.1	Research and identify the type and volume of waste generated from process operations
		2.2	Research and identify the type and amount of waste management equipment required
		2.3	Research and identify specific legislation relevant to tailings storage facility design, construction and ongoing management
		2.4	Identify any organisational-specific waste management requirements, practices or processes
		2.5	Search for, and cost out, tailings equipment, resources, development and maintenance requirements
		2.6	Research waste risk management plans and practices

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		2.7	Research environmental, WHS and community implications to waste management plan and design
		2.8	Consolidate findings from waste/tailings management requirements, and research and use to inform planning and design considerations
3	**Undertake site investigations**	3.1	Conduct initial site visit to inform the planning and design of TMF requirements
		3.2	Determine facility needs, including scope for variation (i.e. diurnal and process variations)
		3.3	Plan contingencies for developing or future situations which may require action to be pre-planned
		3.4	Adjust initial planning and design plans, as appropriate, to incorporate findings of investigations
		3.5	Collect samples and information from site visit for further investigation to inform waste management planning and design
		3.6	Identify key operating personnel, practices and equipment to be considered in the planning and design phase
4	**Analyse and assess design criteria**	4.1	Analyse and assess the design criteria requirements for the type and volume of waste generated from process operations
		4.2	Analyse and assess the design criteria for the type and amount of waste management equipment required
		4.3	Analyse and assess design criteria based on the specific legislation required
		4.4	Analyse and assess design criteria in line with organisational-specific waste management requirements, practices or processes
		4.5	Analyse and assess tailings equipment, resources, development and maintenance requirements, and cost implications

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		4.6	Analyse and assess risk management plan design criteria
		4.7	Analyse and assess implications to operational personnel, training needs and human resource requirements
		4.8	Analyse and assess safety concerns
5	**Assist drafting of TMF construction plan**	5.1	Plan and review tailings management scope
		5.2	Develop timeline, schedule, milestone dates and time management plan
		5.3	Develop cost management plan with built-in review and tracking processes
		5.4	Develop quality management criteria plan with periodic reviews
		5.5	Develop skill, knowledge, training and human resource requirements with built-in review processes
		5.6	Develop information generation, distribution and communication plan with structured review of outcomes
		5.7	Develop risk management plan with risk management strategies, issues registers, opportunities identification and review of outcomes protocols
		5.8	Develop procurement management plan complete with procurement criteria and requirements, procurement contract management processes and review periods

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.

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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
- NSW Dams Safety Act, 1978 and the New South Wales the Dams Safety Committee or similar bodies in other states/territories

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

Hazards

Hazards include one or more of the following:

- overtopping of dam wall
- breach/collapse of dam wall
- construction hazards
- operational hazards (e.g. drowning)
- eco hazards (e.g. wildlife)
- hazardous products and materials
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures

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- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

Design criteria

Design criteria include providing sufficient capacity for the adequate functioning of the TMF and include the following:

- minimising risk of rupture of the tailings slurry delivery pipeline or decant water return pipeline
- minimising risk of rainfall induced erosion of the tailings facility containment wall or water imbalance
- minimising of geotechnical failure/excessive deformation of containment wall
- provision for overfilling with tailings beyond management facility capacity, especially the result of unpredicted tailings production
- minimising unplanned seepage of hazardous materials through the dam wall or through the foundation into the ground water
- protection against dust emissions especially of toxic materials
- provision for unplanned or uncontained floodwater in high rainfall areas

Work requirements

Work requirements will be identified from one or more of the following:

- briefings
- handovers
- orders
- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects

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- hazards and potential hazards
- coordination requirements or issues
- geological data
- site survey data
- site layout and out of bounds areas
- worksite inspection requirements

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS560A Plan and design tailings management facilities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS560 Plan and design tailings management facilities

Modification History

Release 1. Supersedes and is equivalent to PMAOPS560A Plan and design tailings management facilities

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 include the ability to:

- assess business and environmental risk and incorporate risk management strategies into design
- develop plans for tailings management facility (TMF) that specify technical, budgetary, plant/equipment, human resource, legislative and safety requirements
- determine and plan for conditions which will lead to out-of-specification operations
- plan and develop enterprise procedures for the waste/tailings management plan.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- tailings/waste characteristics and their impact on design of facilities, including:
  - mineralogy: residual resource potential and plant nutrients
  - chemical reactivity: toxicity, leachate potential, acid producing potential, spontaneous combustion, cementation/hydration and weathering
  - physical characteristics: particle size distribution, particle density compressibility, shear strength, liquefaction potential, erodibility and dusting potential
  - placement characteristics: placed dry density, particle sorting, permeability, bearing capacity and initial placement density
  - handling characteristics: solids content of slurries, trafficability during placement, flocculation/settling time and abrasiveness
- tailings disposal strategies/issues, including:
  - the location of discharge points
  - the rotation sequence for discharges
  - the duration of deposition in an area
  - the location of settling ponds and decant facilities
  - the location and timing of intermediate paddock bunding
  - the likely landform created by the deposition processes at stages throughout operations up to and including final landform
  - flowable volumes and potential flow paths

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  - operational maintenance requirements (e.g. dust suppression, fauna exclusion and drainage)
- principles of operation of waste treatment and management of different tailings and water types, volumes and consistency.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS600 Modify plant

Modification History

Release 1. Supersedes and is equivalent to PMAOPS600C Modify plant

Application

This unit of competency covers the skills and knowledge required to modify plant hardware.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth technical knowledge of process and plant operation in order to determine operational and technical requirements, develop technical specifications, evaluate options against specifications, select the most appropriate option, and coordinate and supervise the installation and commissioning of the modified equipment.

This unit does not apply to:

- identification of the need for modification; the need for the modification may arise from a continuous improvement project, as a result of an analysis of plant performance or from any other source
- design of equipment; this would typically be an engineering role
- work requiring special certification (e.g. registered structural engineer)

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Confirm required outcomes from modification**	1.1	Communicate with relevant technical, operational and other key personnel to determine operational and technical requirements of the plant modification
		1.2	Determine regulatory/industry code requirements
		1.3	Obtain relevant drawings of existing plant
		1.4	Develop modification brief, including relevant plant schematic sketch, to meet needs
		1.5	Establish required performance measures to indicate success of project
		1.6	Obtain sign-off on modification brief from all relevant persons
2	**Short list possible modifications to meet brief**	2.1	Investigate the range of available equipment/plant units
		2.2	Determine relative advantages and disadvantages between of each class of equipment/type of modification which may provide a solution
		2.3	Compile a shortlist of modification types/equipment classes which will best meet the modification brief
		2.4	Discuss shortlist alternatives with relevant stakeholders and obtain sign-off for the chosen approach
3	**Select technically best equipment/unit/ modification**	3.1	Complete technical specification for required modification incorporating feedback received
		3.2	Compare specification with that of 'off the shelf' equipment, where appropriate
		3.3	Arrange for equipment suppliers to tender to the specification, where necessary, following company procedures
		3.4	Rank competing items by their compliance with the technical specification
4	**Compare hazard profile of possible**	4.1	Organise a hazard analysis (e.g. hazard and operability study (HAZOP)) for the modification according to

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	modifications		company procedures
		4.2	Ensure that all stakeholders are represented on the hazard analysis team
		4.3	Brief the hazard analysis team on the modification and the alternatives under evaluation
		4.4	Eliminate alternatives which do not meet hazard requirements.
		4.5	Rank remaining competing items by safety performance.
5	**Make final choice of solution**	5.1	Evaluate competing items by their economic performance (e.g. life, maintenance and running costs) and rank by total lifetime cost
		5.2	Seek further information where necessary to allow a rational selection to be made
		5.3	Choose the modification which meets all required minimum standards (regulatory, enterprise, output and economic) and will provide the best solution
		5.4	Verify choice in discussion with production and engineering managers and other key stakeholders
		5.5	Arrange for order to be placed, following company procedures
6	**Check and commission modification**	6.1	Undertake pre-commissioning activities
		6.2	Complete safety acceptance documentation
		6.3	Identify, record and report problems or non-conformances
		6.4	Conduct trials/test runs
		6.5	Record and report performance data
		6.6	Bring the plant/plant systems/pipeline on line
7	**Complete**	7.1	Evaluate performance of modification

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modification	7.2	Make adjustments as required
	7.3	Accept (or otherwise) the equipment/unit (and ensure payment flows)
	7.4	Ensure plant procedures and training material updated
	7.5	Ensure plant drawings and engineering specifications are updated
	7.6	Complete all other required paperwork

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

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

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Hazards Hazards include one or more of the following:

- electricity
- flow/pressure
- gas
- equipment failures
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- flammability and explosivity
- hazardous products and materials
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS600C Modify plant

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS600 Modify plant

Modification History

Release 1. Supersedes and is equivalent to PMAOPS600C Modify plant

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 include the ability to:

- determine options for modifications to address identified needs
- determine agreed technical requirements, operations requirements, timelines, cost and other requirements for modifications
- evaluate types of modification and classes of equipment against specifications, hazard and operability study (HAZOP), economic performance and legislative requirements to select best solution
- undertake pre-commissioning activities, trials and evaluations and make adjustments, as required
- ensure training, procedures, plant drawings and specifications are updated to reflect modifications.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the operations of the plant and each major unit in it
- the principles of operation of the equipment being investigated to the extent required to interpret technical specifications in a meaningful manner
- the basics of plant economics and whole of life costing
- hazard analysis principles
- typical hazards with the type of equipment being investigated
- work health and safety (WHS) legislative requirements related to plant, including registration and documentation requirements related to modification of registered plant
- systems operating parameters and integrity limits
- process-specific science (physics, chemistry and biochemistry)
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS601 Debottleneck plant

Modification History

Release 1. Supersedes and is equivalent to PMAOPS601A Debottleneck plant

Application

This unit of competency covers the skills and knowledge required to make changes to plant or process that increase the throughput of a plant. It applies to a small plant or a section/area of a larger plant.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth technical knowledge of process and plant operation and problem solving in order to identify the rate limiting step/process/plant unit (bottleneck), evaluate possible solutions, select the most appropriate option, and coordinate and supervise the plant and/or process modifications.

This unit of competency does not apply to:

- identification of the need for debottlenecking; the need for the debottlenecking may arise from a continuous improvement project, as a result of an analysis of plant performance or from any other source
- design of equipment; this would typically be an engineering role
- work requiring special certification (e.g. registered structural engineer).

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

Pre-requisite Unit

Nil

Competency Field

Operations

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify rate limiting step/process**	1.1	Determine throughput of plant/area
		1.2	Determine capacity of units within plant/area based on design and/or performance data
		1.3	Identify which units is operating at capacity/is the bottleneck
2	**Investigate bottleneck**	2.1	Analyse the science of what is occurring in the bottleneck unit
		2.2	Analyse the engineering/design specification of the bottleneck unit
		2.3	Determine the root cause of the capacity limitation of the bottleneck unit
		2.4	Investigate methods of increasing the capacity of the bottleneck unit
		2.5	List solutions to the bottleneck
3	**Select technically best solution**	3.1	Investigate impact of solutions on the other units of the plant/area
		3.2	Identify any 'knock on' effects of solution
		3.3	Determine process/quality benefits and costs of solutions
		3.4	Determine economic benefits and costs of solutions
		3.5	Short list and rank the best solutions
4	**Compare hazard profile of possible solutions**	4.1	Organise a hazard analysis (e.g. hazard and operability study (HAZOP)) for the solutions according to company procedures

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		4.2	Ensure that all stakeholders are represented on the hazard analysis team
		4.3	Brief the hazard analysis team on the problem and solution alternatives under evaluation
		4.4	Eliminate alternatives which do not meet hazard requirements
		4.5	Rank remaining competing items by safety performance
5	**Make final choice of solution**	5.1	Seek further information, where necessary, to allow a rational selection to be made
		5.2	Choose the modification which meets all required minimum standards and will provide the best solution
		5.3	Verify choice in discussion with production and engineering managers and other key stakeholders
6	**Check solution**	6.1	Initiate and monitor the implementation of the solution
		6.2	Ensure all checks and acceptances are done to procedures
		6.3	Conduct trials/test runs as required
		6.4	Collect and analyse data
7	**Complete modification**	7.1	Evaluate performance of solution
		7.2	Make adjustments as required
		7.3	Ensure plant procedures and training material updated
		7.4	Ensure plant drawings and engineering specifications are updated
		7.5	Complete all other required paperwork

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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

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

Hazards

Hazards include one or more of the following:

- electricity
- gas
- flow, pressure
- equipment failures
- plant services (steam, condensate and cooling water)
- flammabilityand explosivity
- hazardous products and materials
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

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Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS601A Debottleneck plant

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS601 Debottleneck plant

Modification History

Release 1. Supersedes and is equivalent to PMAOPS601A Debottleneck plant

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 include the ability to:

- determine options for debottlenecking to address identified needs
- determine agreed technical requirements, operations requirements, timelines, cost and other requirements for modifications
- evaluate types of modification and classes of equipment against specifications, hazard and operability study (HAZOP), economic performance and legislative requirements to select best solution
- ensure training, procedures, plant drawings and specifications are updated to reflect modifications.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the operations of the plant and each major unit in it
- the principles of operation of the equipment being investigated to the extent required to interpret technical specifications in a meaningful manner
- the basics of plant economics and whole of life costing
- hazard analysis principles
- typical hazards with the type of equipment being investigated
- work health and safety (WHS) legislative requirements related to plant, including registration and documentation requirements related to modification of registered plant
- problem isolation techniques
- problem analysis techniques
- systems operating parameters, integrity limits
- process-specific science (physics, chemistry and biochemistry)
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMAOPS751 Apply physiochemical knowledge to select raw materials for surface coatings

Modification History

Release 1. Supersedes and is equivalent to PMAOPS751A Apply physiochemical knowledge to select raw materials for surface coatings

Application

This unit of competency covers the skills and knowledge required to select raw materials for surface coatings. A surface coating is any liquid (e.g. solvent or emulsion-based) material applied to a solid surface for decorative and/or protective reasons.

This unit of competency applies to senior technicians, laboratory supervisors, research and development personnel, or those in similar roles who are required to apply in-depth physiochemical knowledge in order to evaluate and select coating components (resins, additives and pigments), and design solvent systems to meet surface coatings requirements/specifications.

This unit provides the underlying competency to select materials which may then be combined to make a decorative or non-decorative coating.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Apply knowledge of polymers to surface coating properties**	1.1	Predict coating properties related to nature of polymer base
		1.2	Calculate the molecular weight of a polymer
		1.3	Distinguish between the characteristics of solution, emulsion and dispersion polymers
		1.4	Identify health, safety and environment (HSE), economic and manufacturing-related properties of polymers
		1.5	Identify the effects of monomer selection on product properties
2	**Select resins for surface coatings**	2.1	Distinguish between the characteristics and uses of surface coating resins
		2.2	Identify HSE, economic and manufacturing-related properties of resins
		2.3	Select a resin for a typical end use
3	**Select additives for surface coatings**	3.1	Identify the principal additives used in coatings
		3.2	Distinguish between the characteristics and uses additives
		3.3	Identify HSE, economic and manufacturing-related properties of additives
		3.4	Select an additive for a typical end use
4	**Design a solvent system for surface coatings**	4.1	Identify the role and behaviour of solvent types and their properties
		4.2	Select solvents which may be suitable for an application
		4.3	Identify HSE, economic and manufacturing-related properties of solvents/solvent systems
		4.4	Recommend a solvent system by applying solvent system design principles and solubility parameters

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5	**Select pigments for a surface coating**	5.1	Balance the relationship between particle size, gloss and opacity to achieve required outcome
		5.2	Distinguish between organic and inorganic pigment
		5.3	Identify applications for titanium dioxide (TiO2) pigments
		5.4	Evaluate the need for the use of anti corrosive pigments
		5.5	Verify the need for extenders
		5.6	Identify HSE, economic and manufacturing-related properties of pigments
		5.7	Select a pigment combination for a typical application

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

All operations to which this unit applies are subject to stringent health, safety

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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.

Hazards Hazards include one or more of the following:

- flammability and explosivity
- hazardous products and materials
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- work instructions
- standard operating procedures (SOPs)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS751A Apply physiochemical knowledge to select raw materials for surface coatings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS751 Apply physiochemical knowledge to select raw materials for surface coatings

Modification History

Release 1. Supersedes and is equivalent to PMAOPS751A Apply physiochemical knowledge to select raw materials for surface coatings

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 include the ability to:

- evaluate resins, pigments and additives against specifications, including:
  - chemistry
  - structure
  - physical and chemical properties relevant to surface coating
  - modification reactions as relevant (e.g. alkyds)
  - impact on environment
  - benefits/costs
- select materials for purpose
- calculate the molecular weight of a polymer to determine the effects on the end product.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- characteristics and application of surface coating resins, including:
  - synthetic resins with drying oils
  - alkyd resins
  - modified alkyd resin
  - epoxy resins
  - saturated and unsaturated polyester resins
  - vinyl resin solutions
  - thermosetting acrylic resins
  - phenolic resins
- characteristics and application of additives, including:
  - cellulose
  - nitrocellulose
  - cellulose esters
  - cellulose ethers
- chemistry of raw materials

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- safety data sheets (SDS)
- polymers used in surface coatings and their impact of the surface coating properties and applications
- importance and impact of polymer functional groups
- manufacturing techniques of alkyd resins
- the effects of additives on the final properties of surface coatings
- safety and environmental concerns in the use and handling of solvents
- glass transition temperature of polymers and film forming mechanisms
- the principles of emulsion polymerisation
- the role and behaviour of solvents
- the process of solvent evaporation used in formulating
- the functions of pigments
- reasons for the use of inorganic and organic pigments
- key differences between organic and inorganic pigments
- the performance properties of titanium dioxide (TiO_2) pigments
- the use of anti-corrosive pigments
- the role and properties of extenders
- overall, the reasons for the selection of raw materials when used in surface coatings
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).

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- Assessment 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMAOPS752 Develop a decorative coating

Modification History

Release 1. Supersedes and is equivalent to PMAOPS752A Develop a decorative coating

Application

This unit of competency covers the skills and knowledge required to develop a new decorative surface coating product. A surface coating is any liquid (e.g. solvent or emulsion-based) material applied to a solid surface for decorative and/or protective reasons. A decorative coating may also have a protective function, but its main function is decorative.

This unit of competency applies to senior technicians, laboratory supervisors, research and development personnel, or those in similar roles who are required to apply in-depth physiochemical knowledge in order to develop decorative coating formulations to meet formulation parameters/specifications, specify quality control and performance tests, solve problems, and recommend manufacturing and application methods.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Formulate a decorative coating**	1.1 Confirm the specification/performance requirements of the decorative coating
		1.2 Determine the effect on performance characteristics of formulation parameters

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		1.3	Specify required quality control and performance tests
		1.4	Recommend appropriate raw materials
		1.5	Recommend appropriate raw material suppliers
		1.6	Formulate a decorative coating to specified parameters
		1.7	Ensure laboratory formulations are converted to production scale
2	**Specify the relationship of pigment/binder for a coating**	2.1	Define pigment/binder relationships and their impact on coating properties
		2.2	Calculate pigment/binder ratio, and pigment volume concentration (PVC)
		2.3	Specify pigment/binder relationships appropriate for a coating
3	**Recommend a method of manufacture**	3.1	Identify critical formulation parameters and the effect on manufacturing characteristics for decorative coatings
		3.2	Determine dispersion, let down and mixing required
		3.3	Select the types of equipment required for coating manufacture
		3.4	Recommend a method of manufacture
4	**Identify and control hazards**	4.1	Identify material hazards
		4.2	Identify regulatory requirements
		4.3	Identify other hazards from the manufacture of decorative coatings
		4.4	Recommend appropriate hazard control
5	**Recommend a coating**	5.1	Distinguish between common decorative coating application methods

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application method	5.2	Recommend an application method for decorative coatings

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

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

Hazards

Hazards include one or more of the following:

- equipment failures
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- flammability and explosivity
- hazardous products and materials

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- slippery surfaces, spills or leaks
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS752A Develop a decorative coating

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS752 Develop a decorative coating

Modification History

Release 1. Supersedes and is equivalent to PMAOPS752A Develop a decorative coating

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 include the ability to:

- evaluate raw materials against specifications, including:
  - chemistry
  - structure
  - physical and chemical properties relevant to surface coating
  - modification reactions as relevant (e.g. alkyds)
  - hazards
  - impact on environment
  - pigment/binder relationship
- determine the impact of key variables on formulation and manufacture, including:
  - substrates
  - physical properties
  - cost of raw materials
  - application methods
  - curing conditions
  - drying times
  - pigment/binder relationship
- select materials for purpose
- calculate formulations to customer's requirements
- isolate the causes of problems and to be able to distinguish between causes of problems, such as:
  - incorrect equipment
  - incorrect raw materials
  - inadequate ventilation when manufacturing
  - inability to meet customer specifications
  - inadequate quality control tests
- recommend appropriate manufacturing procedure
- recommend appropriate application method (brush, roller or spray)
- complete written/electronic records
- communicate effectively with internal and external stakeholders.

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Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and impact of pigment binder relationships, including:
  - specific gravity
  - weight and volume solids
  - pigment/binder ratio
  - pigment volume concentration (PVC)
- formulation parameters
- flow point curves
- safety data sheets (SDS)
- toxicity and other hazards of raw materials
- types of raw materials and their chemical properties and functions
- impact of differing raw material suppliers
- principles of dispersion, let down and mixing
- types and application of equipment used for coating manufacture
- quality control methods
- test methods
- organisation procedures
- duty of care obligations
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical assessment must occur using a sufficiently rigorous simulated environment reflecting 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.

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- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAOPS753 Develop a non-decorative coating or ink

Modification History

Release 1. Supersedes and is equivalent to PMAOPS753A Develop a non-decorative coating or ink

Application

This unit of competency covers the skills and knowledge required to develop a new non-decorative coating product. A surface coating is any liquid (e.g. solvent or emulsion-based) material applied to a solid surface for decorative and/or protective reasons. A non-decorative coating may also have a decorative function, but its main function is protective.

This unit of competency applies to senior technicians, laboratory supervisors, research and development personnel, or those in similar roles who are required to apply in-depth physiochemical knowledge in order to develop non-decorative coating formulations to meet formulation parameters/specifications, specify quality control and performance tests, solve problems, and recommend manufacturing and application methods.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Formulate a non-decorative**	1.1	Confirm the specification/performance requirements of the non-decorative coating

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	coating	1.2	Determine the effect on performance characteristics of formulation parameters
		1.3	Specify required quality control and performance tests
		1.4	Recommend appropriate raw materials
		1.5	Recommend appropriate raw material suppliers
		1.6	Formulate an industrial coating/ink to specified parameters
		1.7	Ensure laboratory formulations are converted to production scale
2	**Specify the relationship of pigment/binder for a coating**	2.1	Define pigment/binder relationships and their impact on coating properties
		2.2	Calculate pigment/binder ratio, and pigment volume concentration (PVC)
		2.3	Specify pigment/binder relationships appropriate for a coating
3	**Recommend a method of manufacture**	3.1	Identify critical formulation parameters and the effect on manufacturing characteristics for industrial coatings/inks
		3.2	Determine dispersion, let down and mixing required
		3.3	Select the types of equipment required for coating manufacture
		3.4	Recommend a method of manufacture
4	**Identify and control hazards**	4.1	Identify material hazards
		4.2	Identify regulatory requirements
		4.3	Identify other hazards from the manufacture of non-decorative coatings/inks
		4.4	Recommend appropriate hazard control

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5	**Recommend a coating application method**	5.1	Distinguish between common non-decorative coating/ink application methods
		5.2	Recommend an application method for non-decorative coatings/ink

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

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.

Hazards

Hazards include one or more of the following:

- equipment failures
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)

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- flammability and explosivity
- hazardous products and materials
- slippery surfaces, spills or leaks
- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS753A Develop a non-decorative coating or ink

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS753 Develop a non-decorative coating or ink

Modification History

Release 1. Supersedes and is equivalent to PMAOPS753A Develop a non-decorative coating or ink

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 include the ability to:

- evaluate raw materials against specifications, including:
  - chemistry
  - structure
  - physical and chemical properties relevant to surface coating
  - modification reactions as relevant (e.g. alkyds)
  - hazards
  - impact on environment
  - pigment/binder relationship
- determine the impact of key variables on formulation and manufacture, including:
  - substrates
  - physical properties
  - cost of raw materials
  - application methods
  - curing conditions
  - drying times
  - pigment/binder relationship
- select materials for purpose
- calculate formulations to customer's requirements
- isolate the causes of problems and to be able to distinguish between causes of problems, such as:
  - incorrect equipment
  - incorrect raw materials
  - inadequate ventilation when manufacturing
  - inability to meet customer specifications
  - inadequate quality control tests
- recommend appropriate manufacturing procedure
- recommend appropriate application method (brush, roller or spray, dipping, curtain coating, print roll or ink jet/bubble)

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- complete written/electronic records
- communicate effectively with internal and external stakeholders.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and impact of pigment binder relationships, including:
  - specific gravity
  - weight and volume solids
  - pigment/binder ratio
  - pigment volume concentration (PVC)
- formulation parameters
- automotive paints requirements
- inks formulation
- powder and marine coating formulation
- flow point curves
- safety data sheets (SDS)
- toxicity and other hazards of raw materials
- types of raw materials and their chemical properties and functions
- impact of differing raw material suppliers
- principles of dispersion, let down and mixing
- types and application of equipment used for coating manufacture
- quality control methods
- test methods
- organisation procedures
- duty of care obligations
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

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- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

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PMAOPS755 Provide surface coatings application advice

Modification History

Release 1. Supersedes and is equivalent to PMAOPS755A Provide surface coatings application advice

Application

This unit of competency covers the skills and knowledge required to provide advice on surface coatings application to customers. A surface coating is any liquid (e.g. solvent or emulsion-based) material applied to a solid surface for decorative and/or protective reasons

This unit of competency applies to paint technologists, technical service personnel, research and development personnel, or those in similar roles who are required to apply in-depth physiochemical knowledge of surface coatings and their application in order to determine appropriate coatings, recommend preparation and application methods, and identify and solve problems.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Match coating to substrate**	1.1	Identify substrate to be used
		1.2	Determine requirements of final coated surface
		1.3	Recommend appropriate coating system

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2	**Recommend preparation and application techniques**	2.1	Recommend substrate preparation
		2.2	Select appropriate coating application equipment
		2.3	Determine required rheology of coating
		2.4	Specify required coating tests and interpret test results
		2.5	Specify coating application
3	**Analyse problems with surface coatings**	3.1	Identify non-conformances in coated product
		3.2	Distinguish between preparation, application and paint problems
		3.3	Recommend correct preparation and application to prevent problems

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:

- *AS/NZS 2311:2009 Guide to the painting of buildings*
- *AS 1580 (Set) Paints and related materials – Methods of test*
- *AS/NZS 2310:2002 Glossary of paint and painting terms*
- *AS 3978-2003 Non-destructive testing – Visual inspection of metal products and components*

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- *AS 3894 (Set) Site testing of protective coatings*
- 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

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.

Hazards

Hazards include one or more of the following:

- equipment failures
- flammability and explosivity
- hazardous products and materials
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS755A Provide surface coatings application advice

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAOPS755 Provide surface coatings application advice

Modification History

Release 1. Supersedes and is equivalent to PMAOPS755A Provide surface coatings application advice

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 include the ability to:

- recommend an appropriate coating system
- recommend preparation and application techniques
- analyse surface coating problems, analyse for cause of problem and recommend a coating, and method of preparation and application.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of application methods and application equipment (e.g. brush, roller, paint pad, various spray applications, electrostatic, dip, hot melt, flow coating and powder coating)
- impact of atmospheric conditions (i.e. temperature, humidity and dew point)
- effects of shear in surface coatings, characteristics of shear rates and their importance in coating application
- the potential effects of climate and other environmental influences on both the coating and substrate
- specific service conditions, such as impact, abrasion and general wear and tear and their effect on the final coating
- preparation methods for common substrates
- methods than can be used to prevent paint defects in both wet and dry film defects
- different types of test procedures and test equipment
- impact of the final coating if substrate preparation not adequate
- problems that may arise if incorrect equipment is recommended
- the reasons for compliance coatings
- problems that may arise if incorrect coating is recommended
- the effect of rheology on surface coatings
- adequate tests and equipment to identify correct rheological properties
- differing types of paint defects (dry paint films/wet films)
- decorative requirements, such as colour, gloss and texture
- organisation procedures

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- duty of care obligations
- hierarchy of control
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT260 Form carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT260B Form carbon anodes

Application

This unit of competency covers the skills and knowledge required to form carbon anodes as used in the aluminium smelting or similar process.

This unit of competency applies to operators who are required to operate and monitor the carbon paste preparation and delivery equipment, carbon anode forming and cooling equipment and ancillary equipment; apply re-start, start-up and shutdown procedures; isolate and de-isolate plant; and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path (interruptions or bottlenecks) blockage
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct operations to procedures**	3.1	Start up carbon anode forming equipment
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to resolve problems and take action
		3.6	Shut down carbon anode forming equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance
4	**Isolate and**	4.1	Isolate plant

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de-isolate plant	4.2	Make safe for required work
	4.3	Check plant is ready to be returned to service
	4.4	De-isolate and prepare plant for return to service

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- carbon paste preparation, heating, mixing and delivery

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- carbon anode forming equipment
- carbon anode cooling system
- ancillary equipment, such as heating systems, scrubbers and fans
- materials handling equipment
- harnesses and slings
- conveyors (power and free)
- hand tools

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. heat transfer fluid (HTF), tar and pitch and coal tar pitch volatiles (CTPV))
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- vibe plate distribution and cleaning
- inspections on the compaction station
- blocked strainers on the anode cooling system
- paste belt irregularities
- anode cooling system not operating properly
- jam-ups on power and free conveyors
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

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Monitor equipment operation

Monitoring equipment operations in the carbon anode forming process one or more of the following:

- monitoring bearing lubrication
- monitoring pre-heat distribution of the anode
- monitoring moisture content of the anode
- monitoring strainers on the anode cooling system
- monitoring the cooling tower
- monitoring anode forming
- mobile equipment condition
- checks on pitch pump, paste mixer and cleaning discharge for irregularities
- monitoring paste build-up on scale doors, cover weight and mould seals
- vacuum former failure
- monitoring abnormal trends in the operation of equipment or product specification
- screens, samplers, grates, grids, fume scrubbers, weight feeders, and dust collection systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

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Shutdown procedures Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings,
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT260B Form carbon anodes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT260 Form carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT260B Form carbon anodes

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 include the ability to:

- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the green carbon process
- all items on a schematic of the paste preparation and carbon anode forming process and functions of each
- basic principles of operation of main equipment items, including proportioning, dry mix preheating, mixing/heating, carbon anode forming and carbon anode cooling
- basic physics of operation, including effects of temperature, pressure and impurities on the green carbon anode quality
- basic understanding of the product specifications and variations required on the input and output side
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - evacuation due to fire
  - loss of power
  - excessive emissions of fumes or particulate
  - major oil spill
  - equipment failure

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- typical hazards associated with heat transfer fluid (HTF), tar, pitch, suspended loads and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT261 Bake carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT261B Bake carbon anodes

Application

This unit of competency covers the skills and knowledge required to operate the carbon bake processes in the production of carbon anodes used in the aluminium smelting process.

This unit of competency applies to operators who are required to operate and monitor all equipment in the carbon anode bake process, apply re-start, start-up and shutdown procedures, isolate and de-isolate plant, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start up and shut down procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockages (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct carbon bake operations to procedures**	3.1	Start up anode bake and ancillary equipment
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down anode bake and ancillary equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance

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4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant for return to service

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

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.

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Equipment and tools

Equipment and tools include one or more of the following:

- carbon anode furnace
- ancillary equipment, such as scrubbers and fans
- conveyors
- cranes
- mobile equipment, such as scissor lifts, forklifts and front-end loaders
- harnesses and slings
- materials handling equipment
- hand tools

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- open furnace pits, ring main risers, fire shaft pit, riser shaft and natural gas
- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- furnace emissions
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and

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pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- temperature and oxygen fluctuations
- production line speed variations
- variation of product specification on the input and output side
- electrical problems
- instruments and equipment requiring cleaning
- equipment mechanical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems

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- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedure must follow equipment and site authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedure must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

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Work requirements Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT261B Bake carbon anodes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT261 Bake carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT261B Bake carbon anodes

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 include the ability to:

- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the carbon bake process and functions of each
- basic principles of operation of main equipment items, including scrubbers, port plates, thermocouples and burner tips
- basic physics of operation, including effects of temperature, conveyor speed and time on anode quality
- basic understanding of the product specifications and variations required on the input and output side
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - open furnace pits
  - ring main risers
  - fire shaft pit
  - riser shaft
  - natural gas usage
  - rain and water in electrical ducts
  - explosions due to loss of draft

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  - evacuation due to fire
  - loss of power
  - excessive emissions of fumes or particulate
  - equipment failure
- typical hazards associated with reactive alumina, tar, pitch, kaowool, suspended loads and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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).

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- Assessment 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT262 Clean and strip anode rods

Modification History

Release 1. Supersedes and is equivalent to PMASMELT262B Clean and strip anode rods

Application

This unit of competency covers the skills and knowledge required to operate equipment to clean and strip the spent carbon anodes from the anode rods used in the aluminium smelting process.

This unit of competency applies to operators who are required to operate and monitor the carbon anode and rod cleaning and stripping equipment and ancillary equipment; apply re-start, start-up and shutdown procedures; isolate and de-isolate plant; and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start up and shut down procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockages (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct anode rod stripping and cleaning operations to procedures**	3.1	Start up anode stripping equipment
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down anode stripping equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance
4	**Isolate and**	4.1	Isolate plant

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de-isolate plant	4.2	Make safe for required work
	4.3	Check plant is ready to be returned to service
	4.4	De-isolate and prepare plant for return to service

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- carbon anode cleaning equipment (bath removal)

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- carbon anode stripping equipment, including presses
- rod stripping equipment (removal of iron thimbles)
- rod cleaning equipment, including shot blasting
- rod reject process
- conveyors (power and free)
- cranes
- harnesses and slings
- materials handling equipment
- hand tools

Hazards

Hazards include one or more of the following:

- heat (burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and conveyors
- hazardous materials (e.g. bath and carbon dust)
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

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Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

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Monitoring equipment operation	Monitoring equipment operation in the anode stripping area includes one or more of the following: • monitoring the operation of anode stripping and rod cleaning equipment • monitoring the effectiveness of each process • ensuring removed material is not blocking up • monitoring conveyors, drag chains and lines • mobile equipment condition • monitoring abnormal trends in the operation of equipment or product specification

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT262B Clean and strip anode rods

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT262 Clean and strip anode rods

Modification History

Release 1. Supersedes and is equivalent to PMASMELT262B Clean and strip anode rods

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 include the ability to:

- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the anode stripping and rod cleaning process and functions of each
- basic principles of operation of main equipment items, including:
  - bath removal
  - carbon anode removal
  - cast iron removal
  - rod cleaning
  - reject rod process
- basic understanding of the product specifications, including cleanliness and residue, and variations required on the input and output side
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - evacuation due to fire
  - loss of power
  - excessive emissions of fumes or particulate
  - equipment failure

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- typical hazards associated with reactive alumina, tar, pitch, kaowool, suspended loads and heat stress
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT263 Spray carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT263B Spray carbon anodes

Application

This unit of competency covers the skills and knowledge required to operate equipment to spray aluminium on carbon anodes used in the aluminium smelting process.

This unit of competency applies to operators who are required to operate and monitor the aluminium spray station, molten aluminium delivery system and ancillary equipment; apply re-start, start-up and shutdown procedures; isolate and de-isolate plant; and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start up and shut down procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockages (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct operations to procedures**	3.1	Start up aluminium spray station equipment
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down aluminium spray station equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance

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4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant for return to service

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

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.

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Equipment and tools

Equipment and tools include one or more of the following:

- carbon anode aluminium spray station
- molten aluminium delivery
- conveyors (power and free)
- aluminium melting furnace
- cranes
- hand tools
- harnesses
- crucible transport equipment
- engineering workstation equipment (EWE)
- forklift
- furnace tending vehicle
- other materials handling equipment (fixed and mobile)

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and

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pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

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Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the

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following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT263B Spray carbon anodes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT263 Spray carbon anodes

Modification History

Release 1. Supersedes and is equivalent to PMASMELT263B Spray carbon anodes

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 include the ability to:

- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the carbon anode aluminium spray station process and functions of each
- basic principles of operation of main equipment items, including molten aluminium delivery, power and free conveyors, and spray station
- basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer, and variations required on the input and output side
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - evacuation due to fire
  - loss of power
  - excessive emissions of fumes or particulate
  - equipment failure
- typical hazards associated with reactive alumina, tar, pitch, kaowool, suspended loads and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMASMELT264 Start up reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT264B Start up reduction cells

Application

This unit of competency covers the skills and knowledge required to bake out and start up reduction cells used in the aluminium smelting process.

This unit of competency applies to operators who are required to prepare the refurbished or repaired cell for start-up, bake out the cathode lining, start up the cell, monitor the performance of the cell, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Plan and prepare**	1.1 Interpret and confirm work requirements before

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	for operations		proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path (interruptions or bottlenecks) blockage
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Start up reduction cell to procedures**	3.1	Start up reduction cell
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down reduction cell as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance
4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work

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4.3 Check plant is ready to be returned to service

4.4 De-isolate and prepare plant for return to service

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- reduction cell (pot)
- carbon anodes
- bake out equipment

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- cell tending equipment
- hand tools
- harnesses and slings
- materials handling equipment

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- open furnace pits, ring main risers, fire shaft pit, riser shaft and natural gas
- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- furnace emissions
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- tap out
- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- bake out equipment
- emergency shutdown systems
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

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- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports and records

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks

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- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT264B Start up reduction cells

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT264 Start up reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT264B Start up reduction cells

Performance Evidence

relevant to and satisfy the requirements of the elements and performance criteria, and include the ability to:

- prepare the refurbished or repaired cell for start-up
- bake out the cathode lining
- start up the cell and transfer bath
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the reduction cell process and functions of each
- basic principles of operation of main equipment items, including cathode bed, anodes and adjusters, feeders, bath conditions and current distribution
- basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer, and variations required on the input and output side
- basic understanding of the bake process (gas bake or resistor bake)
- the cell preparation process, including cathode bed, thermocouples, feeders, fittings and connections, bake process, anode installation, bath transfer and shunt removal
- isolating a problem to an item of equipment/stage of process
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - tap outs
  - leak/loss of containment
  - evacuation due to fire or open cell circuit

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  - loss of power
  - excessive emissions of fumes or particulate
  - equipment failure
- typical hazards associated with reactive alumina, tar, pitch, kaowool, suspended loads and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMASMELT265 Operate reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT265B Operate reduction cells

Application

This unit of competency covers the skills and knowledge required to operate reduction cells for the aluminium smelting process.

This unit of competency applies to operators who are required to monitor and control reduction cell operation, conduct anode setting, change anodes, conduct beam raising, shut down cells and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Plan and prepare**	1.1 Interpret and confirm work requirements before

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	for operations		proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path (interruptions or bottlenecks) blockage
2	**Operate reduction cell to procedures**	2.1	Monitor equipment operation and check operational variables are within parameters
		2.2	Adjust equipment/variables in accordance with procedures
		2.3	Respond to cell alarms and take action
		2.4	Verify equipment performance throughout the process
		2.5	Apply operating principles to identify problems and take action
		2.6	Shut down reduction cell as required
		2.7	Conduct routine housekeeping activities
		2.8	Recognise and respond to emergencies should one arise
		2.9	Complete records as required for equipment operation and performance
3	**Conduct cell maintenance activities**	3.1	Conduct routine cell maintenance as required
		3.2	Conduct beam raising as required and in conjunction with others
4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant for return to service

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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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- reduction cell (pot)
- carbon anodes and beams
- harnesses and slings
- materials handling equipment
- hand tools

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- electromagnetic effects
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- tap out
- out-of-parameter operation or product

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- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports and records

Reports and records include one or more of the following:

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- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT265B Operate reduction cells

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT265 Operate reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT265B Operate reduction cells

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 include the ability to:

- monitor and control reduction cell operation
- conduct anode setting
- change anodes as required
- conduct beam raising
- shut down cells
- monitor cell and bath conditions and take appropriate action
- perform housekeeping and minor maintenance procedures
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the reduction cell process and functions of each
- basic principles of operation of main equipment items, including cathode bed, anodes and adjusters, feeders, bath conditions and current distribution
- basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer, and variations required on the input and output side
- isolating a problem to an item of equipment/stage of process
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - tap outs
  - evacuation due to fire
  - loss of power

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    - excessive emissions of fumes or particulate
    - equipment failure
- typical hazards associated with electromagnetic effects, moisture, wet bath and wet soda ash, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
    - will typically include a supervisor/third-party report or other evidence, focussing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
    - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
    - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT266 Deliver molten metal

Modification History

Release 1. Supersedes and is equivalent to PMASMELT266B Deliver molten metal

Application

This unit of competency covers the skills and knowledge required to transport molten metal, such as used in the aluminium smelting process, using mobile transport equipment and crucibles.

This unit of competency applies to operators who are required to collect filled crucibles for transportation, move the crucible to required location, transfer/siphon molten metal to the destination furnace, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct metal delivery operations to procedures**	3.1	Start up equipment as required
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Apply operating principles to resolve identified problems and take action
		3.5	Shut down equipment as required
		3.6	Conduct routine housekeeping activities
		3.7	Recognise and respond to emergencies should one arise
		3.8	Complete records as required for equipment operation and performance
4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work
		4.3	Check plant is ready to be returned to service
		4.4	De-isolate and prepare plant for return to service

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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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- crucibles
- siphoning equipment
- mobile transporting equipment
- harnesses and slings
- materials handling equipment
- hand tools

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- electromagnetic effects
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. chlorine)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

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- delivery of molten metal from reduction cells to clean crucible
- pipe failures (e.g. cracks and blockages)
- venturi and siphon system failure
- siphoning suction equipment failure
- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is

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operated unless stated in the procedures.

Reports and records

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT266B Deliver molten metal

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT266 Deliver molten metal

Modification History

Release 1. Supersedes and is equivalent to PMASMELT266B Deliver molten metal

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 include the ability to:

- collect filled crucibles for transportation and move to required location
- transfer/siphon molten aluminium to the destination furnace
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the siphon equipment, delivery equipment and functions of each
- basic principles of operation of main equipment items, including siphoning equipment and crucible transport equipment
- basic understanding of the product specifications and variations required on the input and output side
- process parameters and limits (e.g. temperature)
- emergency responses, including those related to:
  - leak/loss of containment
  - evacuation due to fire or open cell circuit
  - loss of power
  - excessive emissions of fumes or particulate
  - major oil spill
  - equipment failure

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- typical hazards associated with heat, electricity, hydraulics and pneumatics and high pressure piping and valves, pinch and crush points on conveyor systems, mobile equipment, hazardous materials, banned items, suspended loads and hydration and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third party-report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT267 Cast ingots

Modification History

Release 1. Supersedes and is equivalent to PMASMELT267B Cast aluminium ingots

Application

This unit of competency covers the skills and knowledge required to cast aluminium (or similar) ingots using mould casting methods.

This unit of competency applies to operators who are required to pour molten metal (aluminium) from the holding furnace to delivery launders, operate the casting equipment, stack and strap ingots as required, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Plan and prepare**	1.1 Interpret and confirm work requirements before

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	for operations		proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockages (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as required for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct aluminium casting operations to procedures**	3.1	Start up equipment as required
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance
4	**Isolate and de-isolate plant**	4.1	Isolate plant
		4.2	Make safe for required work

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4.3 Check plant is ready to be returned to service

4.4 De-isolate and prepare plant for return to service

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- tilting furnace
- launders
- casting moulds and/or casting wheel equipment

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- stacking and strapping equipment
- harnesses and slings
- materials handling equipment (fixed and/or mobile)
- hand tools

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- mobile equipment and pedestrian interaction
- hazardous materials
- furnace and crucible emissions
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

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Routine problems are predictable and include one or more of the following:

- out-of-parameter operation or product
- fluctuation in temperature, air pressure, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems.

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

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Reports and records

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- computer readouts locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT267B Cast aluminium ingots

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT267 Cast ingots

Modification History

Release 1. Supersedes and is equivalent to PMASMELT267B Cast aluminium ingots

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 include the ability to:

- pour molten aluminium from the holding furnace to delivery launders
- operate and monitor the casting equipment and ancillary equipment
- stack and strap ingots as required
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the metal delivery, casting and ingot stacking equipment and the function of each
- basic principles of operation of main equipment items, including metal delivery, casting and ingot stacking equipment
- basic understanding of the product specifications and variations required on the input and output side
- process parameters and limits (e.g. temperature)
- emergency responses, including those related to:
  - leak/loss of containment
  - evacuation due to fire or open cell circuit
  - loss of power
  - excessive emissions of fumes or particulate
  - major oil spill
  - equipment failure

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- typical hazards associated with heat, electricity, hydraulics and pneumatics and high pressure piping and valves, pinch and crush points on conveyor systems, mobile equipment, hazardous materials, banned items, suspended loads and hydration and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT268 Operate vertical direct casting process

Modification History

Release 1. Supersedes and is equivalent to PMASMELT268B Vertical direct casting

Application

This unit of competency covers the skills and knowledge required to cast aluminium (or similar) using the vertical direct chill casting (or similar) process (referred to as vertical direct casting or VDC). VDC uses electrical furnace extrusion technology and is typically used for production of aluminium slabs, billet or T-bar.

This unit of competency applies to operators who are required to deliver molten aluminium to the launders and casting equipment, operate the VDC and ancillary equipment, operate the saw as required, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shutdown procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockage (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Conduct VDC operations to procedures**	3.1	Start up equipment as required
		3.2	Monitor equipment operation and check operational variables are within parameters
		3.3	Verify equipment performance throughout the process
		3.4	Adjust equipment/variables in accordance with procedures
		3.5	Apply operating principles to identify problems and take action
		3.6	Shut down equipment as required
		3.7	Conduct routine housekeeping activities
		3.8	Recognise and respond to emergencies should one arise
		3.9	Complete records as required for equipment operation and performance
4	**Isolate and**	4.1	Isolate plant

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de-isolate plant	4.2	Make safe for required work
	4.3	Check plant is ready to be returned to service
	4.4	De-isolate and prepare plant for return to service

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- casting furnace and launders

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- VDC equipment, including casting table
- billet and T-bar saws and associated equipment
- inspection station homogenisers
- mobile transporting equipment
- harnesses and slings
- materials handling equipment (fixed and/or mobile)
- hand tools

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads
- hazardous materials
- furnace emissions
- oxygen and chlorine level fluctuations
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration

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- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- delivery of molten metal from furnace
- pipe failures (e.g. cracks, blockages)
- out-of-parameter operation or product
- fluctuation in temperature, air pressure, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of

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the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports and records

Reports and records include one or more of the following:

- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- quality sample records
- computer read-outs locally or in the control room
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs

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- supervisor or crew leader meetings
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT268B Vertical direct casting

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT268 Operate vertical direct casting process

Modification History

Release 1. Supersedes and is equivalent to PMASMELT268B Vertical direct casting

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 include the ability to:

- pour molten metal from the tilt furnace to launders and casting equipment
- operate and monitor the vertical direct casting (VDC) equipment and ancillary equipment
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the furnace, launders and VDC equipment and the function of each
- basic principles of operation of main equipment items, including furnace, launders and VDC equipment
- basic understanding of the product specifications and variations required on the input and output side
- process parameters and limits (e.g. temperature and flow)
- emergency responses, including those related to:
  - evacuation due to fire and the escape of chlorine
  - loss of power and excessive emissions of fumes or particulate
  - major oil spill
  - equipment failure

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- typical hazards associated with heat, electricity, hydraulics and pneumatics and high pressure piping and valves, pinch and crush points on conveyor systems, mobile equipment, hazardous materials, banned items, suspended loads and hydration and heat stress, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT269 Operate cell tending equipment

Modification History

Release 1. Supersedes and is equivalent to PMASMELT269A Operate cell tending equipment

Application

This unit of competency covers the skills and knowledge required to operate cell tending equipment used to adjust and support the operation of reduction cells for the aluminium smelting (or similar) process.

This unit of competency applies to operators who are required to change anodes, conduct beam raising, conduct metal tapping and bath tapping, replenish cell feed, and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start up and shut down procedures.

This unit of competency does not require the operation of a central control panel.

Some jurisdictions may require the operator of some equipment within this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockage (interruptions or bottlenecks)
2	**Conduct pre-start requirements to procedures**	2.1	Conduct routine pre-start equipment checks
		2.2	Conduct isolation as appropriate for pre-start inspections
		2.3	Prepare equipment for operation
		2.4	Complete routine equipment checklists
		2.5	Complete reports as required for equipment inspections
3	**Operate cell tending equipment to procedures**	3.1	Start up cell tending equipment and perform start up checks as required
		3.2	Conduct beam raising and anode changing as required
		3.3	Conduct cell replenishment as required
		3.4	Conduct metal tapping as required
		3.5	Transfer metal crucibles as required
		3.6	Conduct bath tapping as required
		3.7	Recognise and respond to emergencies should one arise
		3.8	Communicate with others in the reduction cell area
4	**Shut down cell tending equipment**	4.1	Manoeuvre equipment to suitable parking position
		4.2	Shut down equipment
		4.3	Conduct shutdown checks of equipment

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4.4 Complete reports as required

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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- reduction cell (pot)
- carbon anodes and beams
- cell tending equipment
- harnesses and slings

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- materials handling equipment (fixed and/or mobile)
- hand tools

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- electromagnetic effects
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

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Routine problems are predictable and include one or more of the following:

- delivery of molten metal from furnace
- pipe failures (e.g. cracks and blockages)
- out-of-parameter operation or product
- fluctuation in temperature, air pressure, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

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Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

Reports and records

Reports and records include one or more of the following:

- computer readouts locally or in the control room
- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures

Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures

Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements

Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT269A Operate cell tending equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT269 Operate cell tending equipment

Modification History

Release 1. Supersedes and is equivalent to PMASMELT269A Operate cell tending equipment

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 include the ability to:

- operate cell tending equipment to change anodes, replenish cell feed and conduct beam raising, bath tapping and metal tapping
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the reduction cell process and the function of each
- basic principles of operation of reduction cell equipment items, including cathode bed, anodes and adjusters, feeders, bath conditions and current distribution
- basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer
- basic principles of operation of the cell tending equipment, including the crane and all attachments
- process parameters and limits (e.g. temperature, moisture, pressure and flow)
- emergency responses, including those related to:
  - tap outs
  - leak/loss of containment
  - evacuation due to fire or open cell circuit
  - loss of power
  - excessive emissions of fumes or particulate
  - major oil spill

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    - equipment failure
- typical hazards associated with electromagnetic effects, moisture, wet bath and wet soda ash, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
    - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
    - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
    - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASMELT270 Supply product from reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT270A Supply product from reduction cells

Application

This unit of competency covers the skills and knowledge required to tap molten aluminium and bath material (or similar materials) from reduction cells as used in the aluminium smelting (or similar) process.

This unit of competency applies to operators who are required to conduct metal tapping, conduct bath tapping and recognise and respond to 'out-of-parameter' issues.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. The operator would be part of a team during start-up and shut -down procedures.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

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

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1	**Plan and prepare for operations**	1.1	Interpret and confirm work requirements before proceeding
		1.2	Identify and control hazards
		1.3	Ensure appropriate authorisations have been obtained/issued
		1.4	Identify work flow path blockage (interruptions or bottlenecks)
2	**Operate tapping equipment to procedures**	2.1	Monitor equipment operation and check operational variables are within parameters
		2.2	Respond to cell alarms
		2.3	Verify equipment performance throughout the process
		2.4	Adjust equipment/variables in accordance with procedures
		2.5	Apply operating principles to identify problems and take action
		2.6	Siphon molten metal into crucible as required
		2.7	Tap bath in accordance with procedures
		2.8	Conduct routine housekeeping activities
		2.9	Recognise and respond to emergencies should one arise
		2.10	Complete records as required for equipment operation and performance
3	**Stop metal tapping**	3.1	Stop metal tapping and make area safe as required
		3.2	Replace covers and other safety equipment as required
		3.3	Communicate with technician operating cell tending equipment
		3.4	Ensure others in the area are kept informed of operations

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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

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.

Equipment and tools

Equipment and tools include one or more of the following:

- reduction cell (pot)
- carbon anodes and beams
- tapping siphons
- crucibles
- harnesses and slings
- materials handling equipment (fixed and/or mobile)
- hand tools

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards

Hazards include one or more of the following:

- heat (e.g. burns, dehydration and heat stress)
- energy sources (e.g. hydraulic, pneumatic and electric)
- electromagnetic effects
- high pressure piping and valves
- pinch and crush points
- moisture
- banned items
- mobile equipment and pedestrian interaction
- suspended loads and roller conveyors
- hazardous materials (e.g. reactive alumina, kaowool, tar and pitch)
- molten materials
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- tap out

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- out-of-parameter operation or product
- fluctuation in temperature, power consumption or product movement
- instruments and equipment requiring cleaning
- equipment mechanical and electrical problems
- flow path blockages
- out-of-parameter emissions
- unavailability of equipment, personnel or material

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
- historical data and records of common faults
- troubleshooting lists and directives
- site procedures

Non-routine problems must be reported according to according to relevant procedures.

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- emergency shutdown systems
- fire systems
- pressure and temperature control systems
- communications systems
- utility systems

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

Pre-start checks

Pre-start checks will conform to site procedures or equipment pre-start checklist. They must be completed before the equipment is operated unless stated in the procedures.

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Reports and records Reports and records include one or more of the following:

- computer readouts locally or in the control room
- routine inspections (daily readings and monthly checks)
- scheduled maintenance activities
- shift log sheet
- mandatory or statutory inspections
- hazard, accident and incident reports
- quality inspection reports of the product

Shutdown procedures Shutdown procedures must follow equipment and site-authorised checklist and will typically include the following:

- communication to supply and delivery areas
- communication to impacting areas
- obtaining appropriate authorisations
- rescheduling operations
- liaison with maintenance teams

Start-up procedures Start-up procedures must conform to site procedures and will typically include the following:

- safety and pre-start checks
- accessing shift logs and equipment records
- pre-shift briefing information
- records and reports from the previous shift

Work requirements Work requirements will be identified from one or more of the following:

- shift briefings
- shift logs
- supervisor or crew leader meetings
- toolbox talks
- handover details

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASMELT270A Supply product from reduction cells

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASMELT270 Supply product from reduction cells

Modification History

Release 1. Supersedes and is equivalent to PMASMELT270A Supply product from reduction cells

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 include the ability to:

- tap metal and bath
- monitor equipment conditions and maintenance requirements and take action
- monitor process parameters and performance and make adjustments according to procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems and take action to ensure a timely return to full performance
- isolate and de-isolate equipment
- identify hazards and apply hazard control procedures
- respond to emergencies
- apply housekeeping procedures, including cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the reduction cell process and the function of each
- basic principles of operation of tapping equipment
- basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer, and variations required on the input and output side
- process parameters and limits (e.g. temperature, moisture and flow)
- emergency responses, including those related to:
  - tap outs
  - leak/loss of containment
  - evacuation due to fire or open cell circuit
  - loss of power
  - excessive emissions of fumes or particulate
  - major oil spill
  - equipment failure

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- typical hazards associated with electromagnetic effects, moisture, wet bath and wet soda ash, and how to recognise them
- correct use of personal protective equipment (PPE), including specific insulated boots, heat resistant material, full-ventilated suits, full-face masks and other situation-specific equipment.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMASUP236 Operate vehicles in the field

Modification History

Release 1. Supersedes and is equivalent to PMASUP236B Operate vehicles in the field

Application

This unit of competency covers the skills and knowledge required to prepare and operate vehicles and related equipment to patrol pipelines or otherwise drive across a variety of terrains.

This unit of competency applies to operators who are required to check their vehicle daily for damage, ensure fuels and lubricant levels are maintained, effect minor repairs, prepare and maintain field equipment, and communicate with their base station.

In a typical scenario an operations technician patrols areas of pipeline or follows pipelines across a variety of terrains looking for problems which require maintenance or reporting, or drives to remote facilities. During the course of their work they must check the vehicle for mechanical soundness before leaving base, ensure it is securely and adequately packed, make certain their communications equipment and contact schedule are in order and generally be prepared for long periods off-road.

Generally the operations technician would be part of a team during field trips, though they may be required to undertake limited trips. At all times they would be liaising and cooperating with their base station.

Operators must have the appropriate class of driver's licence before taking charge of the vehicle.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare vehicle and secure load**	1.1	Conduct vehicle familiarisation checks before starting journey
		1.2	Note and rectify any defects, where possible, or report vehicle for further attention/repair
		1.3	Ascertain that all required fuel, water and other supplies required for the journey are available and in useable order
		1.4	Inspect all ancillary equipment and operational accessories to ensure they have been attached or secured in a safe and agreed manner
		1.5	Secure load, including external loads, rear tray, roof racks, and any loads within the vehicle, using appropriate securing equipment
2	**Undertake journey**	2.1	Familiarise oneself with the route to ensure that an appropriate route has been determined
		2.2	Interpret access manuals and topographical maps in order to obtain required information for journey
		2.3	Obtain relevant authorisations/notifications and accesses before starting the journey
		2.4	Confirm and/or clarify or communicate journey details with relevant company personnel
		2.5	Monitor driving conditions and requirements constantly, to meet any changes in terrain, weather conditions and road conditions and requirements
		2.6	Monitor and maintain fluid levels and air pressures to ensure safe and efficient vehicle operations
		2.7	Monitor vehicle constantly for any malfunctions or factors that may affect vehicle performance

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		2.8	Maintain vehicle speeds within all stated limits and road condition limitations to minimise the risk of personal injury, environmental damage and load damage
		2.9	Maintain communication as required with the relevant company personnel to advise of progress and journey status
		2.10	Ensure seatbelts are worn by all personnel while the vehicle is in motion
3	**Operate vehicle**	3.1	Apply knowledge of vehicle differences to the driving requirements of 4WD and conventional vehicles
		3.2	Adhere to general principles of four wheel driving in negotiating a variety of terrains and driving conditions
		3.3	Use defensive driving techniques
		3.4	Observe additional precautions for night driving
		3.5	Drive to suit road conditions
		3.6	Observe rules prohibiting driving under the influence of alcohol and other performance inhibiting substances
4	**Finalise journey**	4.1	Communicate and confirm termination of journey with the relevant company personnel
		4.2	Visually inspect the vehicle to ensure that vehicle is in good repair and order
		4.3	Unsecure trailer loads and prepare for unloading utilising the agreed uncoupling process
		4.4	Report faults or damage to vehicle to appropriate personnel
5	**Recover vehicle**	5.1	Identify and assess options for recovery of an immobilised vehicle
		5.2	Select and apply appropriate method of vehicle recovery
		5.3	Operate recovery equipment safely

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		5.4	Perform a battery 'jump start' safely
		5.5	Observe safety precautions when rigging cables and chains
		5.6	Change a wheel on a properly jacked vehicle
6	**Maintain vehicle safety**	6.1	Observe appropriate speeds for the road conditions
		6.2	Observe site-specific vehicle entry restrictions
		6.3	Follow appropriate search and rescue notification procedures
		6.4	Follow appropriate procedures for passing large or heavy vehicles

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

All operations to which this unit applies are subject to stringent health, safety

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- overheating (coolant, exhaust and driveline)
- low oil pressure
- electrical discharge/overcharge
- tyre punctures
- load shifts

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Vehicles

Vehicles include one or more of the following:

- 4WD vehicles, (e.g. utility, troop carrier or station wagon)

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- trucks

Related equipment

Related equipment includes field operator's kit which includes one or more of the following:

- communications equipment ,such as two-way radio, mobile or satellite phone and global positioning system (GPS)
- recovery equipment, such as snatch straps, slings, chains and shackles
- trailers

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP236B Operate vehicles in the field

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP236 Operate vehicles in the field

Modification History

Release 1. Supersedes and is equivalent to PMASUP236B Operate vehicles in the field

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 include the ability to:

- undertake checks and inspections to confirm vehicles, loads, ancillary equipment and supplies meet safety, maintenance and operability requirements
- interpret topographical maps and access manuals
- plan and prepare for journey including confirming route, gaining access/authorisations
- operate communication and recovery equipment
- apply vehicle recovery techniques
- apply basic maintenance procedures
- apply defensive driving techniques appropriate to all legal requirements and range of conditions, including:
  - four wheel drive and conventional vehicles
  - night and day
  - on road and off road
  - changing terrain and conditions
  - wet and dry
- recognise early warning signs of equipment/vehicles needing attention or with potential problems and take appropriate action
- distinguish between causes of vehicle problems/alarms/fault indications, such as:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
- communicate with team and supervisors.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- local and company rules and regulations that apply to vehicles, loads and driving
- routine problems, faults and their symptoms and the corrective action to be taken
- organisation procedures, including those covering:
  - safety, emergency and hazard control
  - communications

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- use and maintenance of vehicles
- search and rescue.

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
  - must include the driving and recovery of a suitable vehicle in an off-road environment and the use of other appropriate items of equipment requiring demonstration of operation 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMASUP237 Undertake crane, dogging and load transfer operations

Modification History

Release 1. Supersedes and is equivalent to PMASUP237B Undertake crane, dogging and load transfer operations

Application

This unit of competency covers the skills and knowledge required to use load shifting equipment to move materials and portable plant around a site.

This unit of competency applies to operators who hold a qualification as a crane operator or licensed dogger or are licensed to operate heavy machinery.

This unit of competency applies to operators who are required to move equipment and supplies, load, unload and stack the items, and initiate routine and emergency maintenance on equipment.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Plan and prepare work**	1.1	Carry out a job hazard analysis (JHA)/job safety analysis (JSA) for job
		1.2	Adhere to site requirements
		1.3	Secure a permit to work, as required
		1.4	Determine coordination requirements with other site personnel
		1.5	Determine job method to include hazard prevention and controls, Australian Standards for safety procedures, codes of practice and manufacturer specifications
		1.6	Erect barricades, warning signs and overhead protection to requirements
		1.7	Determine mass and dimensions of load
		1.8	Determine safe working load (SWL)
		1.9	Determine positioning of load
2	**Select equipment**	2.1	Select lifting/moving equipment and accessories consistent with requirements and within safe working capacity of equipment
		2.2	Inspect gear and label and reject damaged/worn items
		2.3	Select, use and correctly fit personal protective equipment (PPE)
3	**Secure load**	3.1	Secure load and protect to prevent damage
		3.2	Secure moving/loose parts of load and lash to prevent movement
		3.3	Attach, position, adjust and secure equipment correctly, to meet requirements for movement of load
4	**Move load**	4.1	Prepare load destination to accept load

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		4.2	Move load safely to required destination in accordance with planned procedure
		4.3	Use standard communication signals to coordinate safe movement of the load
5	**Remove gear**	5.1	Remove equipment/gear/accessories safely from load
		5.2	Inspect equipment/gear/accessories for wear and damage, clean, maintain and store, and record usage and condition
		5.3	Complete site/job records
6	**Control hazards**	6.1	Identify hazards in site work area
		6.2	Assess the risks arising from those hazards
		6.3	Implement measures to control those risks in line with procedures and duty of care
7	**Respond to problems**	7.1	Monitor transfer frequently and critically throughout load shifting using measured/indicated data and smell, sight, sound and feel as appropriate
		7.2	Recognise transfer problems
		7.3	Analyse cause of transfer problems within scope of skill level
		7.4	Take timely action to solve transfer problems

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.

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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
- road traffic authority requirements

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, include one or more of the following:

- plans
- drawings
- specifications
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity

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- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- unstable loads or load swinging
- faulty or damaged lifting gear
- obstructions on site
- unsafe lifting practices

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Load shifting equipment

This unit of competency includes all such items of equipment and unit operations which form part of the site load-shifting system, including as

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appropriate to the facility:

- crane
- front end loader
- dogging and rigging equipment
- load-shifting equipment (e.g. slings, ropes, shackles, eye bolts, spreader beams, equalising gear, clamps, pulley systems, winches, packs and rigging screws)

Typical of the plant and equipment moved are:

- packaged compressor units
- large pumps and valves
- pipe

Action Action taken in response to problems includes one or more of the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP237B Undertake crane, dogging and load transfer operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP237 Undertake crane, dogging and load transfer operations

Modification History

Release 1. Supersedes and is equivalent to PMASUP237B Undertake crane, dogging and load transfer 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 and include the ability to:

- determine work permit requirements
- select and use equipment to secure, move and remove loads
- undertake checks and inspections to confirm processes and equipment conform to safety requirements and job specifications
- determine the most likely cause of routine problems and take action to ensure a timely return to full performance
- distinguish between causes of problems/alarms/fault indications, such as:
  - equipment failures
  - load spills or damage
  - electrical failure
  - mechanical failure
  - operational problems
- complete records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe working capacity and limits of the equipment
- company-specific work organisations and work flow
- nature/condition of materials being shifted and the particular hazards of each
- organisational procedures, including those covering:
  - work permit systems
  - safety, hazards and hazard control
  - personal protective equipment (PPE)
  - organisation standard operating procedures (SOPs)
- hierarchy of control.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of appropriate industrial load shifting equipment and the moving of actual industrial type loads requiring demonstration of load transfers
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP241 Maintain pipeline easements

Modification History

Release 1. Supersedes and is equivalent to PMASUP241B Maintain pipeline easements

Application

This unit of competency covers the skills and knowledge required to maintain and ensure pipeline integrity.

This unit of competency applies to operators who are required to conduct ground and/or aerial patrols; monitor and report on signage, gate or other difficulties; identify and advise the organisation of any pipeline operational problems; and facilitate access and provision of resources to deal with pipeline incidents.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Plan and prepare maintenance**	1.1	Interpret topographical and geographical maps to determine the selection of access to pipeline route

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	activity	1.2	Select and operate equipment appropriate to the maintenance task in accordance with procedures
		1.3	Inspect and assess easement to determine the required maintenance activities
		1.4	Interpret assessment results and take action
2	**Maintain pipeline easement and surrounding environment**	2.1	Maintain easement in accordance with legislative requirements and enterprise requirements
		2.2	Isolate and secure any required work areas as required by procedures
		2.3	Monitor and log the condition of signage/gates and easement ancillary equipment
		2.4	Take action, as required
3	**Maintain liaison with stakeholders**	3.1	Maintain continuous liaison and contact with pipeline system stakeholders
		3.2	Advise stakeholders of intended activities in accordance with procedures
		3.3	Conduct meetings with stakeholders to discuss notified issues as required
		3.4	Record meeting outcomes in accordance with legislative and enterprise requirements
		3.5	Take action, as required
4	**Control hazards**	4.1	Identify hazards in pipeline work area
		4.2	Assess the risks arising from those hazards
		4.3	Implement measures to control those risks in line with procedures and duty of care

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Hazards

Hazards include one or more of the following:

- gases and liquids under pressure
- equipment failures
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- extreme weather
- remoteness/isolation
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- isolation and risk of exposure
- gas or fluid leaks
- accidental or geophysical rupturing of pipelines

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action taken in response to problems includes one or more of the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person.

Equipment

This unit of competency includes all such items of equipment and unit operations which are utilised in the maintenance of pipeline easements, as

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appropriate to the organisation, including one or more of the following:

- light aircraft (pilot provided)
- off-road vehicles
- gas leakage detectors
- vegetation control documentation and equipment
- workplace mapping (e.g. pipeline alignment drawings, topographical maps and geographical maps)
- pipeline access route manuals

Easement An easement is an area or strip through which a pipeline, or similar infrastructure runs. It may be owned by the operating company or a third-party (or government, non-government organisation (NGO) or similar). The pipeline may be above or below the easement.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP241B Maintain pipeline easements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP241 Maintain pipeline easements

Modification History

Release 1. Supersedes and is equivalent to PMASUP241B Maintain pipeline easements

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 include the ability to:

- interpret topographical and geographical maps
- identify maintenance needs
- plan and prepare for equipment, access and resources needed to undertake maintenance
- identify hazards and control risks
- distinguish between causes of problems/alarms/fault indications, such as:
  - various disturbances on or in the easement
  - visual evidence of a pipeline rupture
  - erosion and subsidence
- liaise and communicate effectively with internal and external stakeholders, including:
  - landowners
  - contractors
  - company personnel
  - regulators and other officials
- complete records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- legal obligations and standing of both parties as it relates to access rights
- pipeline system and access routes
- appropriate and safe vegetation control techniques
- erosion control techniques
- pipeline signage and application requirements
- regulatory framework
- organisation procedures, including those covering
  - safety, emergency and hazard control
  - communications
  - use and maintenance of vehicles
  - environmental management

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- hierarchy of control.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include maintenance of an actual pipeline easement, the use of appropriate items of equipment requiring demonstration of operation and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP242 Monitor pipeline civil works

Modification History

Release 1. Supersedes and is equivalent to PMASUP242B Monitor pipeline civil works

Application

This unit of competency covers the skills and knowledge required to monitor civil works and maintenance being undertaken by external contractors on pipeline easements and associated facilities.

This unit of competency applies to operators who are required to identify and report on the nature of civil works to be undertaken, establish the suitability of the equipment and machinery to be used in the work, ensure the site is accessible to equipment and authorised personnel, and work with third-parties and contractors.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Identify work requirements

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		1.2	Identify and control hazards
		1.3	Coordinate with appropriate personnel
2	**Interpret civil drawings and data**	2.1	Determine required civil works through the interpretation of reports and investigations
		2.2	Access and interpret pipeline alignment drawings to determine area of excavation/civil activity
		2.3	Liaise with appropriate authorities, third parties and/or company personnel
3	**Inspect machinery**	3.1	Inspect equipment required to undertake civil works to ensure that it conforms to requirements
		3.2	Determine most appropriate method of deploying equipment to site
		3.3	Monitor equipment deployment to site and take action
4	**Prepare easement/ site for civil activities**	4.1	Inspect site for the civil works prior to any work commencing
		4.2	Ensure site is prepared
		4.3	Apply knowledge of pipeline crossing design prior to excavation/ activity commencing
		4.4	Ensure permits have been issued for the work
5	**Monitor easement/ site for civil activities**	5.1	Monitor civil works and take action
		5.2	Restore the work affected area on completion of civil works
		5.3	Ensure issued permits have been closed

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Hazards

Hazards include one or more of the following:

- gases and liquids under pressure
- equipment failures
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- remoteness/isolation
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- isolation and risk of exposure
- gas or fluid leaks
- accidental or geophysical rupturing of pipelines.

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Equipment

This unit of competency includes all such items of equipment and unit operations which form part of the monitoring system, including as appropriate to the facility one or more of the following:

- pipe locating equipment
- gas detection equipment
- transport and excavation equipment
- hand tools
- safety signage/barricades and materials

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Action Action in response to problems includes one or more of the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP242B Monitor pipeline civil works

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP242 Monitor pipeline civil works

Modification History

Release 1. Supersedes and is equivalent to PMASUP242B Monitor pipeline civil works

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 include the ability to:

- prepare the site to ensure:
  - site layout is appropriate
  - lay down areas appropriate
  - site access is suitable
- deploy equipment to meet requirements
- check correct permits have been issued
- monitor civil works, including:
  - pipeline integrity
  - adherence to permit to work and procedure requirements
  - adherence to required health, safety and environment (HSE) and legislative requirements for site/works
- undertake hazard and risk control
- determine the most likely cause of routine problems and take action to ensure a timely return to full performance
- distinguish between causes of problems/alarm/fault indications, such as:
  - inappropriate work practices
  - visual evidence of a pipeline rupture
  - erosion and subsidence
  - equipment breakdowns
  - smell or sound of escaping pipeline contents
- determine work specifications from procedures and diagrams
- liaise and communicate effectively with internal and external stakeholders, including:
  - landowners
  - contractors
  - company personnel
  - regulators and other officials.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

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- legal obligations and standing of parties as it relates to access rights where civil works are conducted on easements that require access to private property
- pipeline system and access routes
- pipe locating equipment
- the operation of gas detection equipment
- use of safety signage/barricades and materials
- the use of pipeline alignment drawings
- regulatory framework
- organisation procedures, including those covering:
  - safety, emergency and hazard control
  - work permit systems
  - communications
  - environmental management.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include monitoring of actual pipeline civil works, the use of an appropriate industrial item/s of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - demonstration of skills
  - industry-based case studies/scenarios
  - ‘what ifs’.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

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PMASUP243 Monitor and maintain pipeline coatings

Modification History

Release 1. Supersedes and is equivalent to PMASUP243B Monitor and maintain pipeline coatings

Application

This unit of competency covers the skills and knowledge required to monitor and maintain pipeline coatings.

This unit of competency applies to operators who are required to determine the condition of pipeline coatings, prepare for and apply pipeline coatings, collect and report data from inspections and repairs, and utilise the information to develop appropriate intervention strategies.

In a typical scenario, the operator will be carrying out inspection and testing activities on coated pipelines both in the plant and in the field to procedures and to the parameters established through the principle reference standard *AS 2885.3-2012 Pipelines - Gas and liquid petroleum - Operation and maintenance*. They will also be involved in maintaining the pipeline coating which may have sustained damage for a variety of reasons. Activities will include assessing, through a range of testing and inspection techniques, the integrity of a pipeline's protective coating, and identifying areas requiring repair. Pipelines typically will require preparation to enable the work to be carried out, followed by inspection and testing activities to procedures to ensure the adequacy of the repair work.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate. They would be part of a team during pipeline start-up and shutdown procedures.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Identify work requirements
		1.2	Identify and control hazards
		1.3	Coordinate with appropriate personnel
2	**Prepare pipelines for inspection/ testing**	2.1	Plan and prepare for inspection of pipeline coating to procedures
		2.2	Identify pipeline location to determine workplace hazards
		2.3	Consult appropriate personnel to ensure the work is coordinated effectively with others involved on the work site
		2.4	Obtain tools and equipment needed to carry out the work to procedures and check for correct operation and safety
3	**Inspect and test pipeline coatings**	3.1	Visually inspect pipeline coatings to determine condition and location of irregularities
		3.2	Test pipeline as required to ensure system conforms to required operating parameters
		3.3	Take action, as required
		3.4	Report and record information related to status and any irregularity/deviations to procedures
4	**Prepare pipeline surface and repair coating**	4.1	Isolate work area to enable repair to proceed to procedures
		4.2	Prepare the pipeline surface to receive the coating repair material using appropriate methods

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		4.3	Recoat the pipeline to procedures and test the repair area
5	**Notify completion of work**	5.1	Ensure worksite is clean and waste material is disposed of correctly to procedures and legislative requirements
		5.2	Inform the control centre of the outcome of repairs and any abnormal situations
		5.3	Return pipeline system to normal service to procedures if safe to do so
		5.4	Notify work completion, incidents and irregularities to procedures
6	**Compile and analyse reports**	6.1	Collect and compile repair and operational data into accepted reporting format
		6.2	Take action, as required
		6.3	Ensure reports provide an accurate and ongoing record of deviations in the performance of the pipeline system
		6.4	Utilise information or reports for short and long-term control planning

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

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards Hazards include one or more of the following:

- gases and liquids under pressure
- equipment failures
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- remoteness/isolation
- other hazards that might arise

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Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- coating failure
- temperature, pressure and flow variations
- damage from geophysical or other circumstances
- communication failures

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Equipment

This unit of competency includes all such items of equipment and unit operations which form part of the pipeline inspection and testing system, including as appropriate to the facility, one or more of the following:

- low voltage and high voltage holiday detectors
- coating thickness gauges and meters
- densitometers
- condensators
- coating defect assessment survey equipment (e.g. direct current voltage gradient (DCVG) method equipment and Pearson technique method equipment)

Action

Action taken in response to problems includes one or more of the following:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP243B Monitor and maintain pipeline coatings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP243 Monitor and maintain pipeline coatings

Modification History

Release 1. Supersedes and is equivalent to PMASUP243B Monitor and maintain pipeline coatings

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 include the ability to:

- undertake inspections and tests
- recognise early warning signs of equipment needing attention or with potential problems
- determine the most likely cause of routine problems and take action to ensure a timely return to full performance
- distinguish between causes of problems/alarm/fault indications, such as:
  - variations in coating thickness
  - instrument failure/wrong reading
  - protective coating system characteristics
  - incorrect interpretation of safety data sheets (SDS) information
  - operational problems
- complete forms and documentation
- prepare and analyse reports related to the equipment/systems
- determine work specifications from procedures and diagrams.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the pipeline system and functions of each
- types and applications of surface coating materials and their composition
- routine and non-routine repair techniques
- various coating inspection and test requirements
- regulatory framework
- organisation procedures, including those covering:
  - safety, emergency and hazard control
  - work permit systems
  - communications
  - environmental management
  - standard operating procedures (SOPs)
- hierarchy of control.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include monitoring/maintenance of an actual industrial pipeline, the use of appropriate industrial item/s of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work
  -

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP244 Prepare and isolate plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP244A Prepare and isolate plant

Application

This unit of competency covers the skills and knowledge required to isolate and prepare plant for maintenance work and return to service.

This unit of competency applies to operators, maintainers, maintenance personnel, and those in similar roles who are required to execute the authorised isolation and preparation plan, hand over plant for work and accept handover after work, execute authorised return to service plan and complete required paperwork.

The person will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members, the control room operator, relevant experts and stakeholders as appropriate. They would be part of a team during start-up and shutdown procedures.

This unit of competency applies to preparation and isolation of hazardous plant, such as a major hazard facility. However, it can also be applied with appropriate contextualisation to the preparation and isolation of lower hazard plants and mobile plant.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Perform the isolations**	1.1	Communicate with panel operator and other stakeholders
		1.2	Execute authorised isolation plan
		1.3	Remove materials and energy, as required
		1.4	Control any releases to the environment in accordance with plant procedures
		1.5	Prove the effectiveness of the isolation
		1.6	Decontaminate plant and equipment, as required
		1.7	Recognise and take action on any inconsistencies
		1.8	Test for residual hazards
		1.9	Complete required paperwork
		1.10	Sign-off isolations, as required
		1.11	Hand over to/from shift, as required
2	**Prepare plant for the work**	2.1	Execute authorised preparation plan
		2.2	Recognise and take action on any inconsistencies
		2.3	Confirm plant is ready for the work
		2.4	Hand over plant to the work party
		2.5	Monitor work and plant, as required
3	**Prepare plant for return to service**	3.1	Confirm work is complete and site/plant has been left in acceptable condition
		3.2	Accept handover from work party

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3.3 Obtain authority to de-isolate

3.4 Execute authorised de-isolation plan

3.5 Sign off the de-isolation, as required

3.6 Reverse purge as required by plan for return to service

3.7 Execute authorised plan for return to service

3.8 Test readiness for return to service

3.9 Advise plant is ready for service

3.10 Complete required paperwork

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

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

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Isolation

Isolation is a process for ensuring no energy or material can enter the

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isolated area.

Plant energy sources

Plant energy sources include, as appropriate to the plant, one or more of the following:

- electricity (mains, solar and by generator)
- chemicals and fuels
- heat and steam
- pressure, such as compressed air and water, hydraulic oil and other fluids under pressure
- energy storing devices, such as batteries, springs, flywheels, accumulators and capacitors
- gravity (and its ability to cause items to fall)
- radiation

Control release procedures

Control release procedures will define the release action to be taken for the plant and/or any specified conditions, including one or more of the following:

- preventing any release
- containing any release
- recovery and reuse or disposal of any release

Preparation plan

Preparation plan will define processes to ensure plant and equipment is in a safe and appropriate condition for the required work, including as appropriate to the plant:

- draining
- purging
- inerting
- ventilating
- controlling atmosphere (e.g. to ensure it is breathable and is not within the flammable range)
- adjusting temperature to make a workable environment
- adjusting pressure (usually to atmospheric)
- ensuring adequate access and egress

Isolation plan

Execution of the isolation plan includes, as appropriate to the plant:

- confirming availability of plant, equipment and/or systems
- verifying plant, equipment and/or systems
- verifying isolation location

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- securing and identifying isolation points
- labelling isolation points
- doing the isolations
- managing the isolations
- managing lock out/tag out to procedure
- cross checking isolations
- undertaking self-isolation, were appropriate

Remove materials and energy

Removing materials and energy includes, as appropriate to the plant:

- draining, purging and venting of process materials
- mitigation of stored energy
- appropriately catching and disposing of any removed materials

Effectiveness of isolation

Proving the effectiveness of the isolation includes, as appropriate to the plant:

- checking that any leaks are acceptable
- proving depressuring
- proving purging
- checking bleed from double block and bleed, where appropriate
- proving the atmosphere is as required
- using gas detectors/meters
- proving the isolation is effective
- surveillance of isolations

Test readiness for return to service

Testing readiness for return to service includes, as appropriate to the plant:

- pressure and leak testing
- atmosphere/gas testing
- testing the restoration of utilities and services

Required paperwork

Required paperwork will conform to site requirements and document control systems and are paper, electronic or other approved format.

Paperwork must include:

- isolation register
- lock out/tag out register
- sign-offs
- any reports, permits/work packs, documentation required by the

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job/organisation
- filing of documentation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP244A Prepare and isolate plant

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP244 Prepare and isolate plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP244A Prepare and isolate plant

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 include the ability to:

- implement prepared isolation/de-isolation plan
- read and interpret technical documentation and drawings/graphics
- interpret safety data sheets (SDS)
- undertake tests and interpret test results
- complete required paperwork
- apply procedures to control releases and remove energy and materials.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- isolation philosophy of organisation
- isolation and preparation plan for work
- plant energy sources and their methods of being de-energised and isolated
- hierarchy of isolations
- methods of proving isolations
- methods and equipment used for purging and ventilation
- decontamination methods and requirements for various materials and situations
- as low as reasonably practicable (ALARP) concept
- importance of appropriate rates of change for pressure and temperature for vessels and other plant
- significance of time allowed for draining, purging and ventilation
- fluid dynamics relating specifically to draining piping systems, including:
  - the ability of a liquid to ‘hang-up’ in pipework, the importance of identifying high point vents to release gas/vapours and low point drains to release liquids
  - determining the amount of liquid drained from a piping section to ascertain that draining has been effective/prove drainage
  - the potential effects (e.g. damage to tanks or vessels) of vacuum by not draining correctly (e.g. by pulling a vacuum behind a slug of liquid)
- organisation procedures, including those covering:
  - safety, emergency and hazard control

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- work permit systems
- communications
- environmental management
- standard operating procedures (SOPs).

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP245 Break and make flanged joints using hand tools

Modification History

Release 1. Supersedes and is equivalent to PMASUP245A Break and make flanged joints using hand tools

Application

This unit of competency covers the skills and knowledge required to break and make flanged pipe joints using hand tools.

This unit of competency does not apply where pneumatic, hydraulic or powered torqueing tools are required to be used.

This unit of competency applies to operators who are required to identify requirements for the work, ensure they are working within their skill level, confirm isolations are in place, apply procedures to break and make joints, undertake checks and inspections, complete records, and identify problems and take appropriate action.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency aligns to the technical information in *ASME PCC-1-2013 Guidelines for pressure boundary bolted flange joint assembly.*

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Plan and prepare for job**	1.1	Identify work requirements
		1.2	Inspect job site
		1.3	Confirm isolations have been completed to standard
		1.4	Confirm hazard controls
		1.5	Coordinate with appropriate personnel
		1.6	Select appropriate tools
		1.7	Check calibration and certification of tools in accordance with procedures
		1.8	Re-check that work requirements fit within skill level
		1.9	Complete required checklists and records
2	**Break flange in accordance with flange management procedure**	2.1	Implement hazard controls
		2.2	Prepare tools, drip trays, and so on, with appropriate care
		2.3	Connect any required drain lines
		2.4	Undo nuts in accordance with procedures
		2.5	Split flange and drain pipe as required
		2.6	Identify any skills escalation required
		2.7	Manage open pipe to ensure contents are not contaminated or damaged
		2.8	Complete checklists and records as required
3	**Inspect flange and components**	3.1	Inspect removed gasket for indications of flange problems

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		3.2	Assess cold pull and refer to appropriate personnel if required
		3.3	Assess degree of misalignment and refer to appropriate personnel if required
		3.4	Clean and inspect flange surface both front and back
		3.5	Check studs and nuts
		3.6	Confirm compliance of components and refer to appropriate personnel as required
		3.7	Identify any problems and take action
4	**Make flange joint in accordance with flange management procedure**	4.1	Select appropriate gasket
		4.2	Check all components are to specification
		4.3	Apply lubricant as required
		4.4	Complete initial assembly of joint
		4.5	Insert blind, blank or spectacle/goggle blind as required
		4.6	Attach drain if required
		4.7	Re-check the gasket
		4.8	Re-check alignment
		4.9	Tighten using appropriate hand tools to procedure
		4.10	Use torque calibration charts as required
		4.11	Complete checklists and records as required
5	**Finish the job**	5.1	Make a final check of joint alignment
		5.2	Organise required checks
		5.3	Confirm joint integrity as required
		5.4	Complete checklists and records as required

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

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- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- gases and liquids under pressure
- structural hazards
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- seal/gasket leaks
- pressure loss/low flow
- blockages/build-up/fouling
- erosion/wear
- ancillary equipment problems
- studs incorrectly tensioned
- worn threads
- misalignments
- cold pull
- isolation failure
- leak test failure

Known solutions are drawn from one or more of the following:

- procedures

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- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Action

Action in response to problems includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to resolve to designated person

Action also requires one or more of the following:

- replacing existing components with new components
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's competence
- identifying and controlling hazards related to flange joints

Work requirements

Work requirements include one or more of the following:

- flange and gasket specifications
- stud and nut specification
- process line and process materials
- parts and equipment required
- local detectors requiring isolation
- required skill level
- conflicting work

Work requirements come from briefings, handovers, and work orders and include one or more of the following

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets

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- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Job site

Inspecting job site includes identifying one or more of the following:

- location
- authorisations required
- access and egress needs
- hazards
- recent work undertaken on joint
- flange type (matches specification)

Implementing hazard controls

Implementing hazard controls includes one or more of the following:

- selection and use of appropriate personal protective equipment (PPE)
- obtaining appropriate authorisations
- checking required isolations
- controlling other work in area
- controlling access to area
- using gas tester
- verifying and confirming isolation
- safe flange breaking procedure (line of fire)

Inspecting components

Inspecting flange components includes one or more of the following:

- asbestos in gaskets
- signs of damage, defects or deterioration in all components
- cleanliness and correct surface roughness of mating surfaces
- alignment

Refer to appendices of *ASME PCC-1-2013 Guidelines for pressure boundary bolted flange joint assembly*, for technical details.

Components

Components include the following:

- studs
- nuts
- washers

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- gaskets
- other components as appropriate to the job/work environment

Checking studs and nuts

Checking studs and nuts includes one or more of: the following

- integrity of studs and nuts
- fit of nut to stud
- need for new studs and nuts
- conformance

Initial assembly of joint

Initial assembly of joint includes one or more of the following:

- aligning joint
- inserting studs
- assembling nuts to studs
- inserting and aligning gasket

Blinds

Blinds include one or more of the following:

- blinds
- blanks
- spectacle/goggle blinds

Appropriate personnel

Appropriate personnel will be someone with the required skills, knowledge and/or authority to deal with the matter, including one or both of the following:

- a supervisor
- an engineer

Checklists and records

Checklists and records may include one or more of the following:

- paper or electronic-based
- verbal/radio reports
- reporting items found which require action

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP245A Break and make flanged joints using hand tools

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP245 Break and make flanged joints using hand tools

Modification History

Release 1. Supersedes and is equivalent to PMASUP245A Break and make flanged joints using 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, and include the ability to:

- replace existing components with new components
- carrying out minor maintenance within own skill level
- identify and report problems outside own competence
- identify and control hazards related to flange joints
- inspect job site to confirm:
  - location
  - authorisations required
  - access and egress needs
  - recent work undertaken on joint
  - flange type matches specification
- inspect flange components to check for:
  - contaminants
  - signs of damage, defects or deterioration in all components
  - cleanliness and correct surface roughness of mating surfaces
  - alignment
  - correct specifications.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- flange and gasket types as applicable
- principles of how flanged joints seal
- tool types and applications
- organisation’s flange management procedure
- hierarchy of control
- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities)
- routine problems, faults and their symptoms, and the corrective action to be taken
- process materials and conditions at the location of the flange
- using flange tags/completeness tags

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- relevant environmental requirements

relevant parts of *ASME PCC-1-2013 Guidelines for pressure boundary bolted flange joint assembly*.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the breaking and making of at least two (2) flanged joints, the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP246 Disconnect and reconnect non-flared tube fitting joints

Modification History

Release 1. Supersedes and is equivalent to PMASUP246A Disconnect and reconnect non-flared tube fitting joints

Application

This unit of competency covers the skills and knowledge required to disconnect and reconnect non-flared tube fitting joints using hand tools.

This unit of competency applies to operators who are required to identify requirements for the work, ensure they are working within their skill level, confirm isolations are in place, apply procedures to disconnect and connect tube fitting joints, undertake checks and inspections, complete records, and identify problems and take appropriate action.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit does not cover the initial installation of tube fittings, high pressure fittings or cone fittings.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Plan and prepare for job**	1.1	Identify work requirements
		1.2	Inspect job site
		1.3	Confirm isolations have been completed to standard
		1.4	Confirm hazard controls
		1.5	Coordinate with appropriate personnel
		1.6	Select appropriate tools
		1.7	Re-check that work requirements fit within skill level
		1.8	Complete required checklists and records
2	**Disconnect tube fitting in accordance with procedures**	2.1	Implement hazard controls
		2.2	Prepare tools, drip trays, and so on, with appropriate care
		2.3	Undo support clamps as required
		2.4	Vent as required
		2.5	Break joint and drain tube as required
		2.6	Identify any skills escalation required
		2.7	Manage open pipe to ensure contents are not contaminated or damaged
		2.8	Complete checklists and records as required
3	**Inspect tube and components**	3.1	Inspect fittings and tube
		3.2	Assess degree of misalignment and refer, as required
		3.3	Clean fittings as required

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		3.4	Identify any damage or defects
		3.5	Confirm compliance of components and refer, as required
		3.6	Identify any problems and take action
4	**Reconnect tube fitting in accordance with procedures**	4.1	Check components are to specification
		4.2	Apply sealants/seals as required
		4.3	Assemble the joint to procedures
		4.4	Re-check alignment
		4.5	Reattach support clamps as required
		4.6	Complete checklists and records as required
5	**Finish the job**	5.1	Make a final check of joint alignment
		5.2	Organise required checks
		5.3	Confirm joint integrity as required
		5.4	Complete checklists and records as required

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 The latest version of all legislation, regulations, industry codes of practice

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framework

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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- gases and liquids under pressure
- structural hazards
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials

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- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Work requirements

Work requirements may include one or more of the following:

- fitting, tubing and thread specifications
- fitting brand
- specific sealing method and type
- process line and process materials
- parts and equipment required
- local detectors requiring isolation
- required skill level
- conflicting work

Work requirements come from briefings, handovers, and work orders and include one or more of the following:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects
- hazards and potential hazards
- coordination requirements or issues

Job site

Inspecting job site includes identifying one or more of the following:

- location
- authorisations required
- access and egress needs
- hazards
- recent work undertaken on joint
- fitting type (matches specification)

Implementing hazard controls

Implementing hazard controls includes one or more of the following:

- selection and use of appropriate personal protective equipment (PPE)

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- obtaining appropriate authorisations
- checking required isolations
- controlling other work in area
- controlling access to area
- using gas tester
- verifying and confirming isolation
- safe fitting breaking procedure (line of fire)

Inspecting components

Inspecting tube fitting components includes one or more of the following:

- full tube insertion
- orientation of ferrules
- correct tube deburring
- for signs of damage, defects or deterioration in all components
- confirming compliance of components

Components

Components includes, but are not limited to, one or more of the following:

- fitting body
- fitting nut
- front ferrule
- rear ferrule
- tube
- tube clamps and support saddles

Refer

Refer means to refer the issue to the person with the required skills, knowledge and/or authority to deal with the matter.

Checklists and records

Checklists and records include one or more of the following:

- paper or electronic based
- verbal/radio reports
- reporting items found which require action

Action

Action in response to problems includes the following:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of

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responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to resolve to designated person

Action includes one or more of the following:

- replacing existing components with new components
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's competence
- identifying and controlling hazards related to tube fitting joints

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- fitting leaks
- blockages/build-up/fouling
- erosion/wear
- ancillary equipment problems
- support clamps incorrectly attached
- worn threads
- misalignments
- lack of full tube insertion
- ferrule missing or reversed
- incorrect installation

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP246A Disconnect and reconnect non-flared tube fitting joints

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP246 Disconnect and reconnect non-flared tube fitting joints

Modification History

Release 1. Supersedes and is equivalent to PMASUP246A Disconnect and reconnect non-flared tube fitting joints

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 include the ability to:

- replace existing components with new components
- carry out minor maintenance within own skill level
- identify and report problems outside own competence
- identify and control hazards related to tube fitting joints
- inspect job site to confirm:
  - location
  - authorisations required
  - access and egress needs
  - recent work undertaken on joint
  - tube fitting type matches specification
- inspect non-flared tube fitting components to check for:
  - contaminants
  - signs of damage, defects or deterioration in all components
  - cleanliness and correct surface roughness of mating surfaces
  - alignment
  - correct specifications.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- tube connection types as applicable
- principles of how non-flared tube joints seal
- tool types and applications
- organisation’s tube fitting procedures
- hierarchy of control
- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities)
- routine problems, faults and their symptoms, and the corrective action to be taken
- process materials and conditions at the location of the fitting
- relevant environmental requirements.

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Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the disconnecting and reconnecting of at least two (2) non-flared tube fitting joints, the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP305 Operate offshore cranes

Modification History

Release 1. Supersedes and is equivalent to PMASUP305A Operate offshore cranes

Application

This unit of competency covers the skills and knowledge required to operate a crane on an offshore facility.

This unit of competency applies to the transfer of equipment to and from the support vessel, transfer of personnel between the facility and another vessel using appropriate approved equipment, and safe management of loads during diving operations.

This unit of competency applies to operators who are required to ensure all equipment and materials for the job are available and meet specifications, establish lifting/discharge sequence, ensure that lifts are conducted within operational, safety and environmental limits, and liaise and cooperate with other members of the facility onboard team.

This unit of competency applies to any type of crane used in offshore facilities. Examples include:

- Derrick
- Slewing pedestal
- Bridge and gantry
- Knuckleboom
- Mobile slewing crane.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Plan and prepare for lift**	1.1	Determine job requirements, including potential hazards
		1.2	Identify and apply environmental requirements for the lift in accordance with company procedures and crane limitations
		1.3	Check suitability of load to be lifted
		1.4	Identify, obtain and inspect materials, equipment and resources to satisfy the job requirements
		1.5	Follow safety and environmental requirements in accordance with site-specific procedures
		1.6	Discuss contingency plans with lifting team members, including supply vessel crew
		1.7	Check work location for safe working area requirements
2	**Conduct routine checks of the crane**	2.1	Carry out routine pre-operational equipment checks in accordance with company procedures
		2.2	Commence start-up procedures and check crane controls for correct operation and ease of movement
		2.3	Check communication systems are fully operational
		2.4	Check emergency safety devices are fully operational
3	**Communicate with work group**	3.1	Establish and communicate job sequencing schedule with team and/or crew members to ensure an appropriate level of coordination
		3.2	Advise team members of changes to lifting schedule as required
		3.3	Identify and use communication methods in accordance with company procedures

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4	**Operate crane offshore**	4.1	Determine the load destination and check integrity of the landing area
		4.2	Conduct a trial lift
		4.3	Lift, move and place load safely to required destination
		4.4	Respond to changes to lifting schedule when warranted
		4.5	Use appropriate communication methods to coordinate safe movement of the load
5	**Shut down crane and review operations**	5.1	Clear work area and dispose of or deal with materials in accordance with procedures and job specification
		5.2	Shut down crane in accordance with company procedures
		5.3	Apply work completion procedures and notify relevant personnel that work is finished
		5.4	Review operations, report and record learnings and significant findings

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

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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
- road traffic authority requirements

Types of legislation include*:*

- *AS 2550.1-2011* Cranes, hoists and winches - Safe use - General requirements
- *Norsok Standard R-003 - Safe use of lifting equipment*
- *Offshore Petroleum Act 2006*
- *National Offshore Petroleum Safety Authority Safety Case Guidelines September 2004*
- *Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations 1996*
- *Statutory Rules 1996 No. 298 as amended*
- *OMHEC Training Standard (OHMEC TS 11 March 2003)*
- *http://www.mms.gov/regcompliance/PDFs/GL-I_2005.pdf*
- *http://www.ogp.org.uk/pubs/376.pdf*
- *EN12079*
- *IMO Circular 860*
- *DNV 2.7-1 & 2.7-2.*

Regulatory bodies include:

- National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)
- Australian Maritime Safety Authority (AMSA)
- State/Territory OSH Regulatory bodies
- Department of Infrastructure and Regional Development.

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.

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Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- work instructions
- work plans
- equipment specifications
- company-specific lifting standards and safe working procedures
- emergency procedures
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Types of environments

Types of environments include one or more of the following:

- day and night operations
- facilities subject to helicopter operations
- tropical and temperate climatic conditions

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- emergency lifts
- multi-crane operations including intersecting radii
- restricted radius
- active hydrocarbon production
- active drilling operations
- exploration activities
- diving support
- blind lifts
- personnel transfer
- engineered lifts
- lifting to/from a surface in continuous, three dimensional motion

Trial lift Trial lifts are conducted to ensure:

- stability of load is not compromised
- load is not near capacity of crane
- load is not of unusual proportions

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP305A Operate offshore cranes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP305 Operate offshore cranes

Modification History

Release 1. Supersedes and is equivalent to PMASUP305A Operate offshore cranes

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 include the ability to:

- undertake pre-start checks and start-up and shutdown procedures
- use radio equipment to send and receive information
- manoeuvre and position load shifting equipment
- safely lift and position load
- maintain crane logs
- conduct visual checks of crane operating systems and cables
- check communications systems and emergency and other devise are fully operational
- identify faults, defects or abnormalities and correctly report and record these
- recognise abnormal lifting circumstances and safely abort the lift
- recognise early warning signs of equipment/processes needing attention or with potential problems
- determine the most likely cause of routine problems and take action to ensure a timely return to full performance.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe working capacity and limits of the equipment
- nature/condition of materials being shifted and the particular hazards of each
- crane safety systems
- safe operating principles
- the impact of weather, climatic conditions or other conditions on lifting practices
- cargo planning
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

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  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item/s of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use-industry based simulation for all of the unit, provided it simulates offshore conditions.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP311 Operate communications hub

Modification History

Release 1. Supersedes and is equivalent to PMASUP311A Operate communications hub

Application

This unit of competency covers the skills and knowledge required to use a range of communication equipment and ensure that required communications are completed.

This unit of competency applies to any type of communication that passes through, or is initiated by, the communications hub.

This unit of competency applies to panel operators and those in similar roles who are required to choose the appropriate communication mode, receive and initiate communications, determine and prioritise actions required from communication, check that communications have been received and actions initiated, and identify problems and take appropriate action.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

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

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1	**Use communication modes**	1.1	Turn equipment on/off as appropriate
		1.2	Charge or replace batteries or arrange maintenance to ensure equipment remains operational
		1.3	Follow appropriate protocols for each communication mode being used
		1.4	Select appropriate mode for use
		1.5	Ensure communication used is safe for environment
2	**Deal with incoming communications**	2.1	Receive communication
		2.2	Determine action required from communication
		2.3	Prioritise communication in keeping with all current activities
		2.4	Decide which communications to action, when and how
		2.5	Maintain confidentiality as appropriate
		2.6	Take action required by communication in the current circumstances
		2.7	Ensure communication reaches its intended destination in an appropriate timeframe
3	**Initiate communications**	3.1	Translate process issues into communications as required
		3.2	Identify stakeholders for any required communication
		3.3	Prioritise communications in keeping with all current activities
		3.4	Select appropriate communication mode
		3.5	Communicate as required within an appropriate timeframe
4	**Verify**	4.1	Identify communications which require follow through

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communication	4.2	Identify communications delayed due to other priorities
	4.3	Check all required communications have been received
	4.4	Check appropriate actions have been initiated
	4.5	Identify cause of non-communication/inappropriate action and take required action

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

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.

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Communication modes

Communication modes will be selected as appropriate from:

- radios
- phones
- email
- computer messaging
- public address (PA) system
- written
- verbal

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP311A Operate communications hub

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP311 Operate communications hub

Modification History

Release 1. Supersedes and is equivalent to PMASUP311A Operate communications hub

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 include the ability to:

- select and use appropriate communication modes and protocols under both normal and abnormal plant/process/weather conditions
- identify and prioritise communications that are vital to current operations
- decide which communications require action and how to prioritise them
- identify stakeholders for required communication
- verify that communications have been received and any actions initiated
- identify problems and take action.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types, application of and protocols for different communication modes
- privacy requirements
- methods of prioritising communications with other activities
- issues requiring communication, with whom, and with what priority
- possible actions arising from types of situations and communications
- processes and terminology used in the facility
- organisation procedures, including those covering:
  - safety, emergency and hazard control
  - communications
  - privacy
  - release of information to external bodies.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant

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  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item/s of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
  - may use industry-based simulation for all or part of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP341 Monitor and maintain instrument and control systems

Modification History

Release 1. Supersedes and is equivalent to PMASUP341B Monitor and maintain instrument and control systems

Application

This unit of competency covers the skills and knowledge required to monitor and maintain instrument/electrical systems used for process measurement and control of a process.

This unit of competency applies to process technicians and those in similar roles who are required to test, repair, recommission instrumentation and control systems in the facility; issue permits to allow work to be undertaken; verify equipment operation; calibrate instrumentation; troubleshoot problems; and prepare reports related to the equipment/systems.

This unit of competency applies to any control system/instrumentation forming part of a control system, including those for compressor systems, prime movers, valve systems and systems measuring/controlling flow, pressure or temperature. Control systems can be pneumatic, electrical/electronic, electro-pneumatic, computer-based, and so on.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

MSMPER300 Issue work permits

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Monitor equipment operation**	1.1	Monitor equipment operation according to instrument/electrical equipment operating principles and parameters
		1.2	Access and interpret relevant technical drawings and schematics to determine system faults
		1.3	Issue permit to work to allow work to be undertaken
		1.4	Verify equipment operation/performance through test procedures to ensure correct operation and to confirm identified problems from other sources
		1.5	Correct operational variations through calibration and adjustment
		1.6	Document operational variations
2	**Test/repair equipment**	2.1	Verify equipment is operating correctly and document test results
		2.2	Apply appropriate troubleshooting techniques to determine the cause of operational faults
		2.3	Rectify operational faults through the application of relevant maintenance procedures
		2.4	Isolate, remove and dispose of faulty equipment, and install new equipment
		2.5	Verify the performance of newly installed equipment to ensure it meets required operational parameters and conditions
		2.6	Record all repairs/installations to provide historical records of the condition of system equipment
3	**Recommission**	3.1	Recommission repaired/installed equipment to online

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	systems and equipment		operation in the correct sequence at the required operational parameters
		3.2	Monitor or activate systems to ensure they are operating both safely and effectively
		3.3	Close out permit to work and restore site/system to normal operation
4	**Compile and analyse reports**	4.1	Collect information concerning deviations/repaired equipment and put into accepted reporting format
		4.2	Compile reports ensuring they provide an accurate and ongoing record of deviations in pipeline processes and a current record of pipeline and equipment trends
		4.3	Utilise information or reports for short and long-term deviation control planning

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

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- licence and certification requirements

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Instrument and control systems

This unit of competency includes all such items of equipment and unit operations which form part of the instrument and control systems for plant units, such as:

- compressor systems and equipment – instrumentation and control systems include one or more of the following:
  - compressors, monitoring systems, power supply systems, pumps, pumping systems and equipment, pressure vessels/filtration equipment, coolers, scrubbers, expanders, anti-surge systems, safety systems and compressor control systems
- prime movers, such as turbine engines, reciprocating engines, electric motors – instrumentation and control systems include one or more of:
  - fuel and carburettion systems, ignition systems, lubrication systems, induction and exhaust systems, governing systems, power supply systems, safety and shutdown systems
- flow systems – instrumentation and control systems include one

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or more of the following:

- piping systems, metering equipment, flow control equipment, pressure and temperature transmitters and transducers, telemetry equipment, programmable logic controllers (PLCs), flow computers, electro-pneumatic process control equipment and their associated online analytical instrumentation, such as gas chromatographs, moisture analysers, gas sampling and gas analysis equipment and pig

- valve systems – instrumentation and control systems include one or more of the following:
  - non-control valves, control and shut off valves, non-return or check valves and pressure relief valves, manual hand operated actuator, gas/hydraulic actuator and pneumatic valves

Instrument/electrical systems

Instrument/electrical systems include one or more of the following:

- process analysing systems, eg gas analysis
- emergency shutdown systems (ESD)
- fire systems
- pressure and temperature control systems
- metering systems (e.g. orifice, turbine and positive displacement)
- telemetry and supervisory control and data acquisition (SCADA) systems
- communications systems
- solar systems
- utility systems

Types of faults

Types of faults include one or more of the following:

- material leaks
- electrical problems
- compressor or pump failure
- out of current inspection status
- gauge failure or hose rupture/leaks
- instruments out of calibration
- non-flow of material
- instruments and equipment requiring cleaning

Test equipment

Test equipment will be selected as required from one or more of the following:

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- dead weight tester
- transmission unit
- ice point tester
- decade box
- multimeter
- resistance temperature device (RTD) calibrator
- chart recorders
- data logging equipment

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP341B Monitor and maintain instrument and control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP341 Monitor and maintain instrument and control systems

Modification History

Release 1. Supersedes and is equivalent to PMASUP341B Monitor and maintain instrument and control 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, and include the ability to:

- test, repair, recommission and monitor the operational condition of instrument control systems
- isolate and de-isolate equipment
- read and interpret schematics, technical drawings and technical information
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - equipment design deficiencies
  - product parameters (temperature, flows, pressure and levels)
  - process control system malfunction
  - power/utility failures
- issue permits to allow work to be undertaken
- verify equipment operation
- prepare and analyse reports related to the equipment/ systems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- process and plant schematic and instrumentation diagrams
- types and functions of instrumentation and control devices
- control functions, control regimes, adjustments and tuning
- types and application of test and calibration methods
- types and application of test equipment typically used with control system repair/maintenance/calibration
- short and long-term deviation control planning
- organisation procedures, including those covering
  - safety, emergency and hazard control

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  - work permit systems
  - maintenance
  - standard operating procedures (SOPs)
- hierarchy of control.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the testing and repair of at least three (3) items of equipment, use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP342 Monitor and maintain electrical systems

Modification History

Release 1. Supersedes and is equivalent to PMASUP342B Monitor and maintain electrical systems

Application

This unit of competency covers the skills and knowledge required to monitor and maintain electrical systems and equipment on systems used to carry products.

This unit of competency applies to operations technicians and those in similar roles who are required to test, repair and recommission electrical systems and equipment; issue permits to allow work to be undertaken; verify equipment and system operation; troubleshoot problems; and prepare reports related to the equipment/systems.

This unit of competency applies to a wide range of electrical equipment and systems. Examples include voltage regulators, alternators, generators and motors, battery banks, air conditioning systems, lighting, emergency shutdown systems (ESD), low voltage power systems, communications systems, single wire earth return (SWER) line systems, solar power systems, fire systems and control panels.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

MSMPER300 Issue work permits

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Monitor equipment operation**	1.1	Monitor equipment operation according to electrical equipment operating principles and parameters
		1.2	Access and interpret relevant technical drawings and schematics to determine system faults
		1.3	Issue permit to work to allow work to be undertaken
		1.4	Verify equipment operation/performance through test procedures to ensure correct operation and seek confirmation of identified problems from other sources
		1.5	Correct operational variations through calibration and adjustment
		1.6	Document operational variations
2	**Test/repair equipment**	2.1	Verify equipment is operating correctly and document test results ensuring that statutory electrical testing requirements have been completed
		2.2	Apply appropriate troubleshooting techniques to determine the cause of detected operational faults
		2.3	Rectify operational faults through the application of relevant maintenance procedures
		2.4	Isolate, remove and dispose of faulty equipment, and install new equipment
		2.5	Verify installed equipment to ensure it meets required operational parameters and conditions
		2.6	Record all repairs/installations to provide historical records of the condition of system equipment
3	**Recommission systems and**	3.1	Recommission repaired/installed equipment to online operation in the correct sequence at the required

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	equipment		operational parameters
		3.2	Monitor or activate systems to ensure they are operating both safely and effectively
		3.3	Close out permit to work and restore site/system to normal operation
4	**Compile and analyse reports**	4.1	Collect information concerning deviations/repaired equipment, and put into accepted reporting format
		4.2	Compile reports ensuring they provide an accurate and ongoing record of deviations in pipeline processes and a current record of pipeline and equipment trends
		4.3	Utilise information or reports for short and long-term planning in deviation control

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 which may include:
  - *AS 2885 (Set) Pipelines - Gas and liquid petroleum*
  - *AS/NZS 60079 (Set) Explosive atmospheres*

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- *AS/NZS 1768:2007 Lightning protection*
- *AS/NZS 1596:2014 Storage and handling of LP Gas*
- *AS 2832.1:2015 Cathodic protection of metals - Pipes and cables*
- *AS/NZS 3000:2007 Electrical installations (known as the Australian/New Zealand Wiring Rules)*
- *AS 2239-2003 Galvanic (sacrificial) anodes for cathodic protection*

- utility codes and standards
- licence and certification requirements

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Test equipment

Test equipment will be selected as required from one or more of the following:

- multimeter
- chart recorders
- data logging equipment
- amp and volt meters
- watt meters
- high voltage testing equipment
- earth leakage test equipment
- electrical inspection tags

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP342B Monitor and maintain electrical systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP342 Monitor and maintain electrical systems

Modification History

Release 1. Supersedes and is equivalent to PMASUP342B Monitor and maintain electrical 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, and include the ability to:

- test, repair, recommission and monitor the operational condition of instrument control systems
- isolate and de-isolate equipment
- read and interpret schematics, technical drawings and technical information
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction
  - equipment design deficiencies
  - product parameters (temperature, flows, pressure and levels)
  - process control system malfunction
  - power/utility failures
- issue permits to allow work to be undertaken
- verify equipment operation
- prepare and analyse reports related to the equipment/systems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- company-specific work organisations and work flow
- process and plant schematic and electrical schematic diagrams
- types and application of test equipment typically used with electrical system repair or maintenance
- types, operations and functions of electrical systems and equipment
- types and application of test and calibration methods
- short and long-term deviation control planning
- organisation procedures, including those covering:
  - safety, emergency and hazard control

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  - work permit systems
  - maintenance
  - standard operating procedures (SOPs)
- hierarchy of control.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the testing and repair of at least three (3) items of equipment, use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP345 Monitor vibration

Modification History

Release 1. Supersedes and is equivalent to PMASUP345A Monitor vibration

Application

This unit of competency covers the skills and knowledge required to undertake specialist monitoring activities as part of a preventive maintenance or total productive maintenance plan or program.

This unit of competency applies to monitoring that is undertaken in a workshop, laboratory or in situ environment. Readings are undertaken to the accuracy of monitoring equipment limitations or to site specifications where applicable. The results are typically provided to an engineer or other expert for interpretation and action.

This unit of competency applies to operators who are required to select appropriate monitoring methods and equipment, undertake checks according to procedures, and identify and report deviations from specifications.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for monitoring activities**	1.1	Identify and confirm specifications
		1.2	Select appropriate condition monitoring technique
		1.3	Identify standard operating procedures (SOPs)
		1.4	Identify and control hazards
2	**Undertake condition monitoring**	2.1	Conduct equipment condition monitoring
		2.2	Undertake checks correctly, safely and to SOPs
		2.3	Record results and identify deviations from specifications
		2.4	Report deviations to appropriate authority

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)

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- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

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, include one or more of the following:

- emergency procedures
- work instructions
- SOPs
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel

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- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Monitoring equipment

Monitoring equipment includes one or more of the following:

- built-in systems (software and site displays)
- portable meters or devices
- vibration monitors
- infra-red and ultra-violet, and non-destructive testing

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP345A Monitor vibration

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP345 Monitor vibration

Modification History

Release 1. Supersedes and is equivalent to PMASUP345A Monitor vibration

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 include the ability to:

- recognise early warning signs of equipment/processes needing attention or with potential problems
- select and apply appropriate condition monitoring procedures and equipment
- accurately record results
- prepare and submit deviation reports
- identify hazards and risks and apply risk control procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles and methods of condition monitoring and how they apply in different contexts/situations
- organisation procedures, including those covering
  - safety, emergency and hazard control
  - maintenance
  - standard operating procedures (SOPs)
- hierarchy of control
- use and application of personal protective equipment (PPE)
- safe work practices and procedures.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

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  - must include at least two (2) monitoring activities, the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP347 Undertake corrosion inspection on process plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP347A Undertake corrosion inspection in a petrochemical environment

Application

This unit of competency covers the skills and knowledge required to undertake corrosion inspection on process plant.

This unit of competency applies to operators who are required to identify the corrosion inspection techniques and equipment, undertake inspections, document the results, identify problems and take appropriate action.

This unit of competency applies to corrosion inspections on any structural and equipment items which form part of a process plant facility. Examples include:

- valves
- pumps
- prime movers
- compressors
- separators
- piping, tubing or ducting within facility
- transmission and distribution piping, such as sub-sea or overland piping which may fall under the SAA Gas Pipeline Code
- storage tanks or cylinders
- vessels, columns
- structural steelwork
- wellheads.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

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Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify corrosion inspection equipment**	1.1	Identify corrosion inspection equipment that meets site-specific requirements
		1.2	Locate corrosion inspection equipment according to site-specific applications
2	**Use corrosion inspection equipment**	2.1	Assess conditions to determine the need to use corrosion inspection equipment
		2.2	Select corrosion inspection equipment related to site-specific conditions in accordance with site requirements and equipment suitability
		2.3	Operate corrosion inspection equipment in accordance with operating principles, plant procedures and manufacturer instructions
		2.4	Identify and apply safety procedures relating to corrosion inspection techniques according to site requirements
3	**Use documentation and reporting procedures**	3.1	Use documentation and standards for corrosion inspection equipment reporting according to regulatory and site requirements
		3.2	Use general equipment documentation and relevant information to site-specific requirements

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		3.3	Complete records and documents according to site procedures
4	**Control hazards**	4.1	Identify hazards in the use of the equipment
		4.2	Assess the risks arising from those hazards
		4.3	Implement measures to control those risks in line with procedures and duty of care
5	**Resolve problems**	5.1	Identify possible problems in equipment or process
		5.2	Determine problems needing action
		5.3	Determine possible fault causes
		5.4	Rectify problem using appropriate solution within area of responsibility
		5.5	Follow items initiated through until final resolution has occurred
		5.6	Report problems outside area of responsibility to designated person

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

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Hazards

Hazards include one or more of the following:

- industrial (machinery, equipment and product)
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- flammability and explosivity
- extreme weather
- remoteness
- other hazards that might arise

Routine problems

Problems at this level includes both routine and non-routine problems.

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Routine problems are predictable and have known solutions and include one or more of the following:

- pitting and scaling
- internal and external wall thinning
- crack formation

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP347A Undertake corrosion inspection in a petrochemical environment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP347 Undertake corrosion inspection on process plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP347A Undertake corrosion inspection in a petrochemical 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, and include the ability to:

- select and use inspection and monitoring techniques and equipment
- take accurate measurements
- determine the nature and origins of corrosion discovered in monitoring
- identify hazards and risks and apply risk control procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- identify problems and take action
- communicate effectively with team, group, supervisors and other personnel
- complete forms and documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- causes of corrosion
- nature and types of corrosion
- areas in which corrosion can occur
- inspection and monitoring techniques
- appearance of corrosion on carbon and alloy steels
- corrosion rate estimations
- effects of variables (e.g. temperature, climate/environment and humidity
- mitigation methods.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the inspection of industrial type plant, and the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP410 Develop plant documentation

Modification History

Release 1. Supersedes and is equivalent to PMASUP410B Develop plant documentation

Application

This unit of competency covers the skills and knowledge required to develop, establish and evaluate plant documentation in response to identified information requirements. Examples of information requirements include workplace documents for the introduction of new systems, processes, equipment and record keeping requirements.

This unit of competency applies to senior technicians, team leaders and supervisors, or those in similar roles who are required to apply in-depth knowledge of process and plant to in order to investigate the need for new plant documentation, determine operating principles and best practice in consultation with others, draft and validate the plant documentation, and communicate and distribute the new/amended documentation.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Identify information need/deficiency**	1.1 Identify the need for documentation in accordance with company requirements
		1.2 Evaluate current documentation where existent

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		1.3	Define information need/deficiency
		1.4	Discuss information requirements with appropriate personnel
2	**Develop plant documentation**	2.1	Specify information need and set/prioritise objectives
		2.2	Analyse existing documentation/records in accordance with specified requirements
		2.3	Source information and determine operating principles, best practice and other content as required.
		2.4	Develop/amend documentation as a draft in accordance with specifications to standard format
		2.5	Issue documentation to appropriate personnel for review
		2.6	Edit documentation and amend in accordance with review requirements
		2.7	Complete documentation to satisfy the initial identified need/deficiency
3	**Communicate changes to plant documentation**	3.1	Explain and communicate documentation to all relevant personnel
		3.2	Distribute documentation to all appropriate personnel
		3.3	Evaluate implementation of documentation
		3.4	Amend documents, if required

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.

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Plant documentation

Plant documentation to be developed/amended includes one or more of the following:

- operating procedures
- work instructions
- incident procedures
- operating manuals
- quality manuals and procedures
- training program contents/materials

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP410B Develop plant documentation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP410 Develop plant documentation

Modification History

Release 1. Supersedes and is equivalent to PMASUP410B Develop plant documentation

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 include the ability to:

- review and interpret a range of relevant sources of information and select relevant content
- communicate and consult effectively with all stakeholders
- clearly convey complex/technical information in writing
- use language, structures and formats that are appropriate to information needs, the reader and organisation requirements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation of plant/equipment
- process-specific science (e.g. physics, chemistry and biochemistry) and mathematics
- organisation procedures, including those covering:
  - information systems
  - data management
  - quality
  - safety, emergency and hazard control
  - policy/procedure development
  - document control and approvals
  - style guides and standards for documentation
  - use of internet
  - relevant standard operating procedures
- standard codes of practice relevant to developing plant documentation
- sources of information, including:
  - manufacturing specifications
  - product specifications
  - company policies and procedures
  - customer requirements
  - industry/work place codes of practice
  - state/territory work health and safety (WHS) legislation and regulations

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- ISO and other industry standards and regulations
- industry associations, networks and professional bodies.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include developing and/or amending at least two (2) types of plant documentation, the use of appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.

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- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP420 Minimise environmental impact of process

Modification History

Release 1. Supersedes and is equivalent to PMASUP420B Minimise environmental impact of process

Application

This unit of competency covers the skills and knowledge required to minimise the environmental impact of a plant and/or process. It applies to all resources used and products made by the plant, capital projects and improvements brought about by changes in work practices and procedures.

This unit of competency applies to experienced operators or those in similar roles who are required to apply in-depth knowledge of process and plant to in order to develop practices or procedures for conserving resources and minimising pollution and waste that will deliver the most benefits.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Develop resource conservation practices and/or procedures**	1.1	Identify the nature of resources used in the plant/process
		1.2	Identify the primary source of these resources
		1.3	Determine the impact of the depletion of these resources

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			on the environment and society
		1.4	Determine which resources will yield a greater benefit from their conservation
		1.5	Develop methods to reduce the consumption of these resources
		1.6	Complete required documentation to implement change
2	**Develop pollution minimisation practices and/or procedures**	2.1	Identify the nature of pollutants produced by the plant/process
		2.2	Determine the sources of these pollutants within the plant/process
		2.3	Determine the impact of these pollutants on the environment and society
		2.4	Determine which pollutant will yield a greater benefit from their reduction
		2.5	Develop methods to reduce the production of this pollutant
		2.6	Complete required documentation to implement change
3	**Develop waste minimisation practices and/or procedures**	3.1	Identify the nature of wastes produced by the plant/process
		3.2	Determine the sources of these wastes within the plant/process
		3.3	Identify the impact of these wastes on the environment and society
		3.4	Determine which wastes will yield a greater benefit from their reduction
		3.5	Develop methods to reduce the production of this waste
		3.6	Complete required documentation to implement change

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP420B Minimise environmental impact of process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP420 Minimise environmental impact of process

Modification History

Release 1. Supersedes and is equivalent to PMASUP420B Minimise environmental impact of 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, and include the ability to:

- examine plant records, data and operating procedures and practices to determine options for:
  - maximisation of product yield from raw materials
  - reduction in volume of pollutants made and/or reduction in concentration/intensity of pollutants made and/or reduction in emissions
  - minimisation of wastes
- determine relative benefits of the options and develop processes/procedures to achieve preferred options
- document preferred options and complete written and/or electronic records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- resources used by the plant and the impact on the environment and society of using resources
- nature and source of pollutants and waste materials produced by the plant
- nature and severity of the effect the pollutants and waste materials can have on the environment and society
- types of local conditions that can make environmental threats more ‘sensitive’
- pathways of entry to the environment from the plant
- process parameters and limits
- product specifications and tolerances
- principles of operation of plant/equipment
- science (e.g. physics, chemistry and biochemistry) relevant to the process, its materials and eco impacts
- regulatory framework
- organisation procedures, including those covering:
  - environmental management
  - safety, emergency and hazard control
  - procurement.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMASUP432 Coordinate pipeline projects

Modification History

Release 1. Supersedes and is equivalent to PMASUP432B Coordinate pipeline projects

Application

This unit of competency covers the skills and knowledge required to scope and coordinate pipeline projects. It applies to pipeline projects, such as:

- installation of new plant piping and equipment
- pipeline repairs and modifications (e.g. hot tap and stoppling operations, welding and cutting operations)
- upgrades of existing plant, piping and equipment
- commissioning of pipelines and facilities
- construction and upgrade of pipeline easements.

This unit of competency applies to operators who are required to prepare scoping documents, specifications and/or tenders; coordinate the project through the construction and commissioning phases; prepare reports; liaise with stakeholders; and ensure that the project conforms to all safety requirements.

This unit of competency does not require the operation of a central control panel.

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

Pre-requisite Unit

MSMPER300 Issue work permits

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare project specification documents**	1.1	Analyse the proposed project to establish contract specifications
		1.2	Facilitate a documented hazard and risk assessment on the proposed project, identifying all potential hazards and risks
		1.3	Draft specification documents stating the required work activity and health, safety and environmental requirements
		1.4	Seek tenders for the specified works, review according to the relevant company procedure and appoint a winning tenderer
2	**Prepare project schedule and documentation**	2.1	Draft a project schedule to establish project timeframe, work activities and procurement of materials
		2.2	Apply the job safety analysis (JSA) process to specific project activities reflecting any health, safety and environmental (HSE) issues identified in the project risk and hazard assessment
		2.3	Write procedures and work instructions for project work activities from the outcome of the JSA process
3	**Facilitate induction training for project**	3.1	Discuss company/site-specific procedures and HSE requirements with contractors/employees carrying out the specified works
		3.2	Review all persons who are inducted to ensure they understand the company/site procedures and HSE requirements
		3.3	Inspect all equipment and machinery utilised to carry out the works to ensure these comply with company/site requirements

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4	**Monitor progress of project**	4.1	Purchase materials required for fabrication and installation on the project and inspect to ensure all items meet project specifications
		4.2	Monitor project works to ensure activities are carried out to project specification and minimal impact occurs on existing operations and environment
		4.3	Issue permits to work where project activities impact on existing pipeline operations
		4.4	Amend and/or modify original specifications and communicate to all parties involved according to the relevant company procedure
		4.5	Produce project reports updating project schedule progress, activities and HSE issues, and discuss with all parties involved.
		4.6	Draft operations manuals and compile vendor data manuals to assist in the operation of the equipment/facility after project completion
5	**Complete and commission project**	5.1	Commission the project to ensure all work carried out meets project specifications and operational requirements
		5.2	Restore the project site to meet environmental, heritage and operational requirements
		5.3	Cancel permits to work and sign-off at completion of works
		5.4	Check all documentation, records and drawings pertaining to the project, verify for accuracy and hand over to the relevant operational department

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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:

- *AS 2885 (Set) Pipelines - Gas and liquid petroleum*
- *AS 4041-2006 Pressure piping*
- *AS/NZS 3000:2007 Electrical installations (known as the Australian/New Zealand Wiring Rules)*
- 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
- requirements set by authorities, such as:
  - Environmental Protection Authority (EPA)
  - Department of Primary Industry and Energy (DOPIE)
  - Departments of Minerals and Energy State and Territory
  - Worksafe Australia.

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)

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- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Sources of information

Sources of information include, as appropriate to the project:

- regulatory framework
- procedures
- internal stakeholders
- pipeline alignment drawings
- process and instrument drawings
- workshop fabrication drawings

Inspection and testing

Inspection and testing techniques include, as appropriate to the project:

- hydrostatic testing
- magnetic particle inspection

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- radiography
- ultrasonic inspection
- dye penetrant inspection

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP432B Coordinate pipeline projects

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP432 Coordinate pipeline projects

Modification History

Release 1. Supersedes and is equivalent to PMASUP432B Coordinate pipeline projects

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 include the ability to:

- interpret information from a range of sources to determine project specifications, including scope of health, safety and environmental (HSE) requirements, schedules and resource requirements
- coordinate and monitor project activities
- identify hazards and risks and apply risk control procedures
- convey information relevant to the operation clearly and effectively to contractors, employees and other stakeholders
- complete written and/or electronic documentation for the project, including:
  - budget updates
  - project schedule progress report
  - materials and spares listings
  - safety statistics report
  - hazard and incident reports
  - procedures/work instructions
- interpret plans and drawings.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- architecture of pipeline systems and facilities
- pipeline operations knowledge
- pipeline system operating parameters
- quality assurance systems and plans
- emergency response plans and procedures
- preparation and submission of safety cases
- pipeline licenses
- environmental statutes and standards
- project contract and budget management techniques
- regulatory framework
- organisation procedures, including those covering:

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    - safety, emergency and hazard control
    - policy/procedure development
    - permit system
    - procurement
    - project management
- duty of care obligations
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
    - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
    - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
    - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMASUP440 Commission/recommission plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP440B Commission/recommission plant

Application

This unit of competency covers the skills and knowledge required to commission new plant/pipeline or recommission significantly modified plant/pipeline. It applies to plant/pipeline, such as on or offshore plant, wellheads, transmission pipelines or similar.

Commissioning refers to the start-up of a new plant or plant unit and the associated equipment for the first time. Recommissioning refers to the start-up of an existing plant following major modifications, rebuild or reconfiguration.

This unit of competency applies to senior technicians and those in similar roles who are required to apply in-depth knowledge of process and plant in order to ensure design of new/modified plant meets safety and operability requirements, plan and coordinate commissioning/recommissioning, and complete required documentation. The technician would not normally have a 'hands on' operating role for all items of equipment, but may have a 'hands on' role for major items of equipment; however this is not required as part of this competency.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

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

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1	**Contribute to/review the design of plant/ equipment**	1.1	Apply process understanding to the design process
		1.2	Identify the role and purpose of the plant and equipment
		1.3	Ensure design meets the identified need
		1.4	Identify process conditions and apply to hazard and operability studies (HAZOP)
		1.5	Undertake investigations following hazard studies
		1.6	Record and report findings
2	**Take part in commissioning planning**	2.1	Ensure the work is coordinated effectively with others involved on the work site
		2.2	Obtain materials necessary to complete the work and check against job requirements
		2.3	Obtain tools and equipment necessary to carry out the work and check for correct operation and safety
		2.4	Prepare plans to ensure that procedures are performed in the correct sequence
		2.5	Obtain approvals, where necessary, from appropriate authorities
3	**Participate in acceptance of plant/ equipment**	3.1	Undertake pre-commissioning activities
		3.2	Complete safety acceptance documentation
		3.3	Identify, record and report problems or non-conformance
		3.4	Conduct trials/test runs
		3.5	Record and report performance data
4	**Commission system**	4.1	Bring the plant/plant systems/pipeline online
		4.2	Make and report adjustments
		4.3	Prepare reports in accordance with legislative and

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			company requirements to maintain the historical record
5	**Evaluate results and identify modifications**	5.1	Identify modifications and improvements required
		5.2	Check specifications, procedures and training material match the final system/procedures
		5.3	Complete documentation and report to appropriate personnel

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

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.

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Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Documentation

Documentation includes one or more of the following:

- operating procedures
- work health and safety (WHS) and environmental legislative

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requirements
- manufacturer specifications
- appropriate authority approvals (e.g. local councils, road authority, sewerage, stormwater, electricity, water and telephone)
- quality assurance inspection and test reports

Plant/pipeline systems

This unit of competency includes all items of equipment and unit operations which form part of the pipeline system including, as relevant to a particular plant/pipeline:

- pipes
- valves
- operating units
- electrical and electronic components
- programmable logic controllers (PLCs)/distributed control system (DCS) or other plant controls
- cathodic protection (CP)
- pressure/flow/temperature, regulation and meters

Tools, materials and equipment

Tools, materials and equipment include one or more of the following:

- hand tools,
- power operated tools
- plant
- emergency equipment
- electrical and electronic test equipment
- gas detectors
- air compressor
- water pump

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP440B Commission/recommission plant

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP440 Commission/recommission plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP440B Commission/recommission plant

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 include the ability to:
- plan, coordinate and monitor pre-commissioning, commissioning/recommissioning activities
- arrange resources as required
- communicate effectively with stakeholders, including manufacturers, engineering personnel, designers, contractors and maintenance and other company personnel
- participate in and/or review hazard and operability studies (HAZOP), hazard analysis studies (HAZAN) or similar techniques
- participate in and/or review design or modification plans
- identify hazards and risks and apply risk control procedures

complete written/electronic documentation.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- all items on a schematic of the system and functions of each
- principles of operation of items of equipment in the system
- principles of operation of instrumentation
- principles of basic control systems
- process control philosophies and strategies
- interactions between plant items/processes
- systems' operating parameters
- system integrity limits
- product tolerances, limitations and specifications
- types and purpose of typical pre-commissioning activities, including:
  - checking plant is built to design
  - ensuring plant is safe to operate
  - ensuring plant area and plant internals are clean and clear of debris
  - functional checking of equipment and ancillaries
- types and purpose of typical commissioning/recommissioning activities, including:
  - trial running of equipment
  - use of trial materials in plant

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  - safe introduction of process materials to plant
  - producing product within specification
  - bringing plant to design rates
  - solving operational problems
  - disposal of waste generated in the start-up
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials
- process parameters and limits (e.g. temperature, pressure, flow and pH)
- correct methods of starting, stopping, operating and controlling plant
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMASUP441 Decommission plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP441C Decommission plant

Application

This unit of competency covers the skills and knowledge required to decommission an existing plant/pipeline or major plant area, and its associated equipment. It applies to plant/pipeline, such as on or offshore plant, wellheads, transmission pipelines or similar.

Decommissioning refers to the removal from service of plant/pipeline and equipment and its storage, 'mothballing' or disposal.

This unit of competency applies to senior technicians and those in similar roles who are required to apply in-depth knowledge of process and plant in order to plan and supervise the systematic shutdown, cleaning out and preparation for safe 'mothballing' of all of the plant and equipment.

The technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

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

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1	**Contribute to decommissioning planning**	1.1	Apply process understanding to the planning process
		1.2	Identify the role and purpose of the plant and equipment
		1.3	Ensure the work is coordinated effectively with others involved on the work site
		1.4	Identify process conditions and apply to hazard studies
		1.5	Undertake investigations following on from hazard studies
		1.6	Obtain materials necessary to complete the work and check against job requirements
		1.7	Obtain tools and equipment necessary to carry out the work and check for correct operation and safety
		1.8	Prepare plans to ensure that procedures are performed in the correct sequence
		1.9	Obtain approvals where necessary from appropriate authorities to ensure decommissioning process proceeds in accordance with the plan
		1.10	Complete all appropriate documentation
2	**Isolate and decontaminate equipment/unit according to procedures**	2.1	Interpret and apply decommissioning plan
		2.2	Identify and use appropriate safety equipment and materials
		2.3	Isolate and decontaminate equipment components
		2.4	Dispose of contaminated materials or components
		2.5	Complete required documentation
3	**Inspect, test and notify completion of work**	3.1	Select tools and equipment appropriate to the testing/inspection requirements and utilise in accordance with manufacturer specifications and legislative requirements
		3.2	Test/inspect in accordance with requirements
		3.3	Ensure compliance with work health and safety (WHS)

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	legislative requirements for risk assessment prior to disposal
3.4	Ensure any required additional work is undertaken/initiated
3.5	Notify work completion

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

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.

Hazards

Hazards include one or more of the following:

- electricity

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- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Documentation

Documentation includes one or more of the following:

- operating procedures
- WHS and environmental legislative requirements
- manufacturer specifications
- appropriate authority approvals (e.g. local councils, road authority, sewerage, stormwater, electricity, water and telephone)
- quality assurance inspection and test reports

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Plant/pipeline systems

This unit of competency includes all items of equipment and unit operations which form part of the pipeline system including, as relevant to a particular plant/pipeline:

- pipes
- valves
- operating units
- electrical and electronic components
- programmable logic controllers (PLCs)/distributed control systems DCS) or other plant controls
- cathodic protection (CP)
- pressure/flow/temperature, regulation and meters

Tools, materials and equipment

Tools, materials and equipment include one or more of the following:

- hand tools
- power operated tools
- plant
- emergency equipment
- electrical and electronic test equipment
- gas detectors
- air compressor
- water pump

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP441C Decommission plant

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP441 Decommission plant

Modification History

Release 1. Supersedes and is equivalent to PMASUP441C Decommission plant

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 include the ability to:
- plan, coordinate and monitor decommissioning activities
- arrange resources as required
- document the decommissioning and recommendations for safe storage/maintenance/disposal
- communicate effectively with stakeholders, including manufacturers, engineering personnel, designers, contractors and maintenance and other company personnel
- participate in hazard and operability studies (HAZOP), hazard analysis studies (HAZAN) or similar techniques
- identify hazards and risks and apply risk control procedures

complete written/electronic documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of items of equipment in the system
- interactions between plant items/processes
- systems' operating parameters
- system integrity limits
- procedures for typical options/processes for removal of plant and equipment from service, including:
  - 'mothballing'
  - storage
  - disassembly
  - demolition
  - decontamination of equipment
  - disposal of equipment and waste
- safe disposal methods of materials and equipment
- decontamination processes
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials processed or produced

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- process parameters and limits (e.g. temperature, pressure, flow and pH)
- correct methods of starting, stopping, operating and controlling plant
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP444 Plan plant preparation and isolation

Modification History

Release 1. Supersedes and is equivalent to PMASUP444A Plan plant preparation and isolation

Application

This unit of competency covers the skills and knowledge required to plan and prepare for isolation of plant and its return to service. This unit of competency applies after the work scope has been agreed, but before the isolation and preparation commences.

Isolation is a process for ensuring no energy or material can enter the isolated area. Typically the isolation will occur so that the plant can be prepared for subsequent work, such as maintenance.

This unit of competency applies to senior technicians, operator/maintainers, maintenance planners, authorised permit issuers, and those in similar roles who are required to apply in-depth knowledge of process and plant in order to confirm the work to be done; plan the isolation and de-isolation strategies, preparations and sequencing; obtain authorities; liaise with stakeholders and complete documentation. The technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency. This competency may form part of their regular work role or could be a full-time role on secondment for a major shutdown.

This unit of competency applies to hazardous plant, such as a major hazard facility. However, with appropriate contextualisation it can be applied to the preparation and isolation of lower hazard plants and mobile plant.

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

Pre-requisite Unit

Nil

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Confirm scope of work**	1.1	Examine identified work scope (e.g. what, where, who, when, why, duration and frequency)
		1.2	Confirm purpose of identified work
		1.3	Identify plant and equipment involved
		1.4	Negotiate any conflicts/inconsistencies with relevant stakeholders
		1.5	Identify possible need for temporary lifting of any isolations
2	**Develop isolation philosophy for work**	2.1	Apply relevant isolation philosophy/strategy, including type of/hierarchy of isolation and lock out/tag out
		2.2	Determine implications of isolation
		2.3	Identify physical limits of affected plant and equipment
		2.4	Check suitability and effectiveness of existing isolation procedures
		2.5	Assess possible boundaries for isolations
		2.6	Seek local knowledge for similar isolations and preparations
		2.7	Identify available/permissible preparation strategies, including purging fluids and techniques
		2.8	Draft strategies for isolation and preparation
		2.9	Communicate, as appropriate, with stakeholders
		2.10	Negotiate isolation and preparation conflicts
		2.11	Prepare isolation philosophy for work

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3	**Manage hazards**	3.1	Identify existing hazards of plant, process and materials
		3.2	Identify hazards associated with performing the isolations and preparation
		3.3	Identify hazards associated with purging/flushing/venting materials
		3.4	Draft strategies for controlling any releases
		3.5	Estimate required preparation durations taking into account factors, such as starting conditions, safe rates of change (pressure, temperature), volumes and pressures required
		3.6	Make recommendations for improvement in accordance with procedures
		3.7	Liaise with technical experts as required
		3.8	Specify types of isolations and locations of isolations required
		3.9	Specify controls to bring hazards to ‘as low as reasonably practicable’ (ALARP)
4	**Plan required isolation and preparation**	4.1	Determine required sequencing of all steps
		4.2	Develop isolation procedure
		4.3	Develop preparation procedure
		4.4	Develop decontamination procedures
		4.5	Develop required procedures for plant supplementary systems
		4.6	Verify procedures against relevant drawings and the plant
		4.7	Identify and schedule required pre-work
		4.8	Determine competencies required to complete planned isolations and preparation
		4.9	Plan required de-isolation and preparation for return to service

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		4.10	Discuss proposed plans with relevant stakeholders
		4.11	Complete required documentation
5	**Obtain authority to execute plan**	5.1	Obtain approval to implement the isolation and preparation plan
		5.2	Obtain approval to implement the de-isolation and preparation for return to service plan
		5.3	Acquire hardware and resources for isolation and de-isolation and preparation for work and return to service

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:

- Government of Western Australia, Department of Commerce, Guidance note – Isolation of plant, 2010 (or similar state regulation)
- National Offshore Petroleum Safety Authority (NOPSA) requirements, where relevant
- Major Hazard Facility (MHF) Licence to operate, where relevant
- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards

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- licence and certification requirements

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

Hazards

Hazards include one or more of the following:

- electricity
- gas (flammable, toxic and anoxic)
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, 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
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes

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- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Determining competencies required

Determining competencies required for isolation and preparation includes consideration of the need for skilled/qualified/licensed personnel in the areas of the following:

- electrical (normal)
- electrical high voltage and hazardous area
- electrical isolation/de-isolation
- radiation
- heights
- mobile plant
- plumbing
- mechanical fitting
- permit preparation

Isolation procedures

Isolation procedures include one or more of the following:

- isolation processes
- isolation list
- multiple isolations
- temporary lifting of isolations, when and if required
- interlocks
- and will include consideration of:
  - isolation alternatives
  - conflicts of isolation

Verifying procedures

Verifying procedures include one or more of the following:

- checking existing documents which have been used are accurate, current and complete
- checking planned isolation points do exist, are accessible, and are suitable for the isolation planned
- having a history of providing the isolation desired

Relevant drawings

Relevant drawings include one or more of the following:

- piping and instrumentation diagrams (P&IDs)
- process flow diagrams (PFDs)
- process flow sheets (PFSs)

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- process engineering flow sheets (PEFs)

Required pre-work

Required pre-work includes one or more of the following:

- scaffolding
- building up/depletion of inventories/work in progress (WIP)
- obtaining of supplies
- identification tags
- lock out kits

Required documentation

Required documentation includes one or more of the following:

- drawings
- procedures
- marking up existing documents
- punch lists
- vendor documents/engineering specifications
- documentation required by the site work control system (e.g. permits)

Documents will conform to the site requirements and document control systems, and will be paper-based, electronic or in another approved form.

Authority to execute

Authority to execute includes both the authorisation to proceed and the timing of that execution. Authority will be obtained through the channels required by the organisation/facility.

The level of authority required will vary for different types of work, different types of isolation and different plants/facilities.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP444A Plan plant preparation and isolation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP444 Plan plant preparation and isolation

Modification History

Release 1. Supersedes and is equivalent to PMASUP444A Plan plant preparation and isolation

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 include the ability to:

- plan, prepare and develop plant preparation and isolation philosophy/activities for a particular activity
- arrange resources as required
- communicate effectively with stakeholders, including manufacturers, engineering personnel, designers, contractors and maintenance and other company personnel
- identify hazards and risks and apply risk control procedures
- complete written/electronic documentation.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- all items on a schematic of the system and functions of each
- principles of operation of items of equipment in the system
- process parameters and limits, (e.g. temperature, pressure, flow and pH) and plant integrity limits
- typical requirements for preparation to ensure that plant and equipment is in a safe and appropriate condition for the required work, including:
  - draining
  - purging
  - inerting
  - decontaminating
  - cleaning
  - ventilating
  - controlling atmosphere (e.g. to ensure it is breathable, and is not within the flammable range)
  - adjusting temperature to make a workable environment
  - adjusting pressure (usually to atmospheric)
  - ensuring adequate access and egress

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- implications of isolation in both the area of the work and upstream and downstream, including:
  - upstream and downstream process implications
  - ability to prepare plant once isolated
  - integrity of plant once isolated and prepared
- methods for controlling releases to the environment, including:
  - preventing any release
  - containing any release
  - recovery and reuse or disposal of any release.
  -

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Simulation may be used for part only of this unit.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP445 Participate in HAZOP studies

Modification History

Release 1. Supersedes and is equivalent to PMASUP445A Participate in HAZOP studies

Application

This unit of competency covers the skills and knowledge required to participate in hazard and operability studies (HAZOP).

HAZOP is a systematic method for examining complex facilities or processes to identify actual or potentially hazardous procedures and operating issues within the design, construction and commissioning of equipment and plant so that they may be eliminated or mitigated. Typically a multi-disciplinary team comprising operators, engineers, safety and other personnel will review a change in plant, process or equipment to see if the change can cause unforeseen hazards or introduce unexpected operability problems and confirm that the change meets the standards.

This unit of competency applies to senior technicians and those in similar roles who are required to apply in-depth knowledge of process and plant in order to review piping and instrumentation diagrams (P&IDs) or similar in relation to a proposed change, identify possible hazards or operability issues, recommend amendments to improve safety and operability of the change, and review and amend procedures in relation to the change.

This unit of competency applies to an individual who is part of a multi-disciplinary HAZOP team. At all times they would be liaising and cooperating with members of the team.

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

Pre-requisite Unit

PMAOPS280 Interpret process plant schematics

Competency Field

Support

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for HAZOP study**	1.1	Explain the purpose of the HAZOP study
		1.2	Review the key steps in undertaking the HAZOP study
		1.3	Review the HAZOP tools to be used
2	**Participate in a HAZOP study**	2.1	Identify the purpose and operation of the new/modified equipment/process
		2.2	Determine the normal operating conditions, method of operation and associated equipment and componentry of proposed change
		2.3	Review relevant information to assist in the identification of possible problems
		2.4	Process available information to identify potential hazards or operability issues
		2.5	Identify potential hazards or operability issues and possible consequences utilising key words
		2.6	Assess the risks arising from identified potential hazards or operability issues
		2.7	Identify items needing further action
		2.8	Review relevant operating and safety procedures
		2.9	Recommend possible solutions to minimise risk of proposed change
3	**Complete delegated actions within scope of responsibility**	3.1	Perform delegated actions within area of responsibility
		3.2	Follow initiated items through until final resolution has occurred
		3.3	Identify problems needing further action

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3.4 Determine possible fault causes within area of responsibility

3.5 Report outcomes to designated person

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.

Hazards

Hazards identified are situations/conditions which may lead to an incident or make operation difficult and will arise from consideration of key words.

Sources of information

Sources of information include, as appropriate to the proposed change:

- provisional layouts
- safety data sheets (SDS)
- process drawings (e.g. P&IDs, process flow diagrams (PFDs), and cause and effect)
- plant model
- equipment arrangement drawings
- provisional operating instructions/procedures
- plant operating procedures
- logic diagrams
- equipment reference manuals
- hazardous area layouts
- start-up and shutdown emergency procedures
- access to plant and equipment

Delegated action

Delegated actions arising from HAZOP study include one or more of the

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following:

- review of plant operating procedures
- undertaking additional tasks from action list HAZOP report
- attendance at HAZOP review meetings
- recording results from additional tasks

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP445A Participate in HAZOP studies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP445 Participate in HAZOP studies

Modification History

Release 1. Supersedes and is equivalent to PMASUP445A Participate in HAZOP studies

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 include the ability to:

- analyse schematics and other sources of information to identify actual and/or potential hazards and recognise conditions that might lead to operability issues
- utilise key words in the identification of potential hazards or operability issues
- identify possible consequences and asses risks from identified potential hazards and operability issues
- recommend possible solutions
- complete actions delegated from the HAZOP
- communicate effectively with multi-disciplinary stakeholders.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the architecture and location of the process/production equipment
- specific plant process operations
- interactions between plant items/processes
- product specifications and tolerances
- systems operating parameters
- system integrity limits
- process control philosophies and strategies
- emergency shutdown procedures
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials
- impact of external factors (e.g. variations in weather and feed)
- process drawings (e.g. piping and instrumentation diagrams (P&IDs), process flow diagrams (PFDs), and cause and effect)
- basis of control for the plant/s
- instrumentation and control systems, components and loops as they relate to the modification under review
- impacts of changing process/production equipment settings and the limits within which changes can be made
- organisation procedures
- work health and safety (WHS), hazardous substances and environmental requirements

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- enterprise standard operating procedures, plant processes and equipment for area under review
- duty of care obligations
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:

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- being currently employed undertaking the type of work being assessed
- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

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PMASUP520 Review procedures to minimise environmental impact of process

Modification History

Release 1. Supersedes and is equivalent to PMASUP520B Review procedures to minimise environmental impact of process

Application

This unit of competency covers the skills and knowledge required to establish and review procedures to minimise the environmental impact of a process and/or plant using a proactive environmental management approach. Proactive environmental management goes beyond complying with environmental requirements and integrates environmental goals with core business objectives.

This unit of competency applies to senior technicians, paraprofessionals or those in similar roles who are required to apply in-depth knowledge of process and plant in order to develop, implement and review procedures that will conserve resources and minimise pollution and waste, and ensure that the procedures are supported by appropriate training and record keeping.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Develop procedures for**	1.1 Develop workplace procedures of proactive environmental management which include resource

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	environmental management		conservation, pollution and waste minimisation
		1.2	Determine primary source of respective aspects
		1.3	Determine the negative impact of these aspects on the environment and the society if they are mismanaged
		1.4	Prioritise management options according to the greatest benefit to environment and the society
		1.5	Develop management procedures
		1.6	Complete required documentation to implement change
2	**Review procedures for environmental management**	2.1	Review the procedures on a regular basis by consulting relevant work groups for feedback
		2.2	Incorporate relevant feedback into the revised procedures in consultation with the relevant personnel
		2.3	Inform relevant work groups of any changes and implement changes in the procedures
3	**Implement and review an environmental management training program**	3.1	Identify the workplace environmental management training program
		3.2	Review the program on a regular basis by consulting relevant work groups for feedback
		3.3	Incorporate relevant feedback into the revised program in consultation with the relevant personnel
		3.4	Inform relevant work groups of any changes and implement changes in the training program
4	**Implement and review environmental management recording system**	4.1	Identify the workplace environmental management recording system
		4.2	Review the system on a regular basis by consulting relevant work groups for feedback
		4.3	Incorporate relevant feedback into the revised system in consultation with the relevant personnel

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4.4 Inform relevant work groups of any changes and implement changes in the management of environmental records

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

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, include one or more of the following:

- emergency procedures
- work instructions

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- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Stakeholders

Stakeholders include one or more of the following:

- organisation management and operational staff
- suppliers
- contractors
- others acting on the organisation's behalf
- customers

Sources of information

Sources of information include one or more of the following:

- organisation goals, commitments and procedures (e.g. business/strategic plans, voluntary environmental agreements entered into with external organisations/authorities, and organisation policies and procedures)
- regulatory framework
- consultation with internal stakeholders
- own knowledge and experience of plant/process
- technical/operational documentation
- schematic (e.g. piping and instrumentation diagrams (P&IDs and process flow diagrams (PFDs))

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP520B Review procedures to minimise environmental impact of process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP520 Review procedures to minimise environmental impact of process

Modification History

Release 1. Supersedes and is equivalent to PMASUP520B Review procedures to minimise environmental impact of 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, and include the ability to:

- analyse information from a range of sources to determine environmental aspects/interactions of plant and/or processes and potential impacts
- develop, evaluate and prioritise options for minimising impact
- develop and document procedures to implement priority options
- communicate and consult effectively with stakeholders
- review and revise relevant procedures, record keeping system and training programs to reflect amendments and feedback from stakeholders.

Knowledge Evidence

Evidence must be provided that demonstrates sufficient knowledge to interact with relevant personnel and be able to establish and review procedures to minimise the environmental impact of a process, including knowledge of:

- aspects of interaction of plant/processes with the environment and society
- the effects on the environment and society of the organisation's:
  - liquid waste
  - solid waste
  - gas/fume/vapour/smoke emissions, including fugitive emissions
  - hazardous materials
  - energy and water use
  - noise
- management strategies and workplace practices that can be used to minimise or prevent these effects, including:
  - recycling and reusing
  - reducing amount of non-renewable resources used
  - reducing volume and/or concentration/intensity of pollutants made
  - reducing emissions
  - improving housekeeping (e.g. using a broom instead of a hose, and using old rags for cleaning instead of toxic cleaners or water)

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  - substituting materials (e.g. replacing toxic solvent-based coatings with water-based ones)
  - changing processes (e.g. mechanical cleaning, and re-design of products/procedures so that materials are used more efficiently)
  - tenders for the provision of goods and services that specify environmentally preferred selection criteria
- nature and severity of the effect the pollutants and waste materials can have on the environment and society
- types of local conditions that can make environmental threats more 'sensitive'
- pathways of entry to the environment from the plant
- systems operating parameters
- system integrity limits
- process control philosophies and strategies
- product specifications and tolerances
- principles of operation of plant/equipment
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials
- organisation procedures, including those covering:
  - environmental management
  - safety, emergency and hazard control
  - procurement
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- It is not necessary for the recommended improvements in utility/efficiency to be complete for the purposes of this unit.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).

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- Assessment 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP540 Analyse equipment performance

Modification History

Release 1. Supersedes and is equivalent to PMASUP540B Analyse equipment performance

Application

This unit of competency covers the skills and knowledge required to analyse performance of plant, equipment and equipment components and recommend improvements. It applies to all work environments and sectors within the chemical, hydrocarbons and refining industry.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant in order to calculate the theoretical performance of an item of equipment, gather data to determine the actual performance of the item of equipment, calculate actual versus theoretical performance, and make recommendations based on the performance verification results.

The technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this unit of competency.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine**	1.1	Identify item of plant or equipment to be analysed

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	theoretical performance	1.2	Locate and interpret design specification
		1.3	Identify process materials being, or to be, processed during verification trial
		1.4	Determine process material properties under process conditions
		1.5	Calculate theoretical performance of components with that material under those conditions
2	**Conduct trial**	2.1	Design verification trial to be compatible with theoretical analysis
		2.2	Determine measurements needed from trial to yield required data
		2.3	Select equipment suitable to give required measurements
		2.4	Arrange for verification trial with relevant process personnel
		2.5	Set up required measurement equipment
		2.6	Supervise trial and ensure trial conditions are appropriate
		2.7	Collect trial data for analysis
3	**Verify performance of plant/equipment**	3.1	Compare theoretical with actual performance
		3.2	Determine significance of variation between theoretical and actual performance
		3.3	Investigate any suspicious results and take action
4	**Recommend required action**	4.1	Determine action to bring performance to desired level
		4.2	Initiate the corrective action in accordance with company procedures
		4.3	Determine measures to increase equipment productivity
		4.4	Re-check performance after corrective action is

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implemented

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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)

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- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP540B Analyse equipment performance

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP540 Analyse equipment performance

Modification History

Release 1. Supersedes and is equivalent to PMASUP540B Analyse equipment performance

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 include the ability to:
- design and implement verification trial appropriate to the plant/equipment, theoretical analysis and required data
- undertake theoretical/mathematical and practical analysis of the process
- recommended changes that are justified based on the comparison of trial and theoretical data
- calculate equipment and component performance from the design specification
- determine equipment and design performance from practical trials
- determine the 'limiting component' in the performance of an item of equipment or a process
- determine possible performance of an item of equipment/process if practical improvements were made to the 'limiting item'

predict interactions between materials, equipment and process and their impacts on performance.

Knowledge Evidence

Evidence must be provided that demonstrates sufficient knowledge to interact with relevant personnel and be able to analyse equipment performance, including knowledge of:

- methods of identifying and calculating theoretical performance
- ways of trialling, trial design and implementation
- methods of data analysis to determine trial outcomes
- methods of interpreting information deduced from trial data
- all items on a schematic (e.g. piping and instrumentation diagrams (P&IDs) and process flow diagrams (PFDs) of the system and the function and principles of operation of each
- systems operating parameters
- system integrity limits
- process control philosophies and strategies
- process parameters and limits
- product specifications and tolerances
- principles of operation of plant/equipment
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials

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- organisation procedures
- duty of care obligations
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Simulation may be used for part only of this unit.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASUP620 Manage environmental management system

Modification History

Release 1. Supersedes and is equivalent to PMASUP620B Manage environmental management system

Application

This unit of competency covers the skills and knowledge required to establish and manage the environmental management system.

This unit of competency applies to senior technicians, paraprofessionals and those in similar roles who are required to demonstrate in-depth knowledge of the business, process and plant in order to identify and quantify business opportunities from environmental management and establish procedures, goals and systems to implement environmental sustainability, continuous improvement and sustainable innovation as integral to the business.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Develop an environmental management system**	1.1 Select an appropriate environmental management system as a model for the enterprise/plant
		1.2 Develop environmental management policies that reflect the organisation's commitment to environmental sustainability as an integral part of business planning

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			and as a business opportunity
		1.3	Develop strategies to encourage all stakeholders to meet high standards of environmental performance and support sustainable innovation and continuous improvement
		1.4	Develop policies and procedures to incorporate and support triple bottom line principles
		1.5	Develop policies/procedures which minimise environmental impacts
		1.6	Check policies conform to current regulatory requirements
		1.7	Address environmental management at the planning, design and evaluation stages to ensure that any changes in the workplace are identified for ongoing impact and opportunity
2	**Manage innovation and improvement**	2.1	Identify, evaluate and take into consideration changing trends and opportunities relevant to the organisation for ongoing improvement programs
		2.2	Promote continuous improvement and sustainable innovation as an essential part of doing business and as a context for assessment and planning of environmental performance
		2.3	Develop continuous improvement and innovation policies and procedures that include training and professional development to optimise the environmental performance of the organisation
		2.4	Develop a system to analyse and communicate the costs and benefits of innovations and improvements and to measure, monitor and record environmental performance
		2.5	Develop performance benchmarks and indicators and set targets to maximise continuous improvement
3	**Review environmental management**	3.1	Develop processes to ensure that an integrated ongoing review is part of the organisation policy and procedures
		3.2	Promote improvement and sustainable innovation to

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system	organisational performance by ongoing evaluation and assessment, and changes to policies

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:

- relevant Commonwealth and state/territory Environment Acts
- applicable state/territory environmental regulations
- licences and permit conditions
- industry codes of practice and guidelines
- Australian and other standards
- environmental treaties and conventions
- national environmental policies, strategies and initiatives, such as the National Greenhouse Strategy and National Strategy for Ecologically Sustainable Development
- National Pollutant Inventory
- State of the Environment Reports
- Industry Association Commitments (e.g. The Global Mining Initiative)
- health and safety legislation, codes of practice and guidance material
- legislative requirements, including work health and safety (WHS)
- environmental regulations and guidelines
- licence and certification requirements

All operations to which this unit applies are subject to stringent health,

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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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Sources of information

Sources of information include one or more of the following:

- organisation goals, commitments and procedures (e.g. business/strategic plans, voluntary environmental agreements entered into with external organisations/authorities, and organisation policies and procedures)
- regulatory framework
- consultation with internal and external stakeholders
- own knowledge and experience of plant/process
- technical/operational documentation
- schematic (e.g. piping and instrumentation diagrams (P&IDs) and process flow diagrams (PFDs))
- available research/data (e.g. industry benchmarking data/systems and sustainability performance measures/metrics)

Performance benchmarks

Performance benchmarks and targets include one or more of the following:

- best practice or industry codes for the industry/sector
- levels of performance expected of organisation sectors and/or the organisation as a whole

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Stakeholders

Stakeholders include one or more of the following:

- board members, financial backers and owners
- all members of the organisation, including management and staff members
- suppliers
- contractors
- others acting on the organisation's behalf
- customers
- external individuals or bodies who may have an interest in or may be affected by the organisation

Continuous improvement and innovation policies

Continuous improvement and innovation policies include one or more of the following:

- consistent reviewing activities in search of a better way
- improving the organisation in all aspects of its operation and may look at life cycle impacts of the organisation, including:
  - activities and products are designed to minimise life cycle impacts and maximise opportunities
  - tendering and purchasing processes that include life cycle criteria
  - product design and manufacture
  - packaging policies
  - product use and disposal
- vehicle policies that include use of cleaner fuels or alternative energy sources and regular servicing intervals to reduce pollution and improve efficiency

Environmental sustainability

Environmental sustainability may be influenced by one or more of the following:

- the organisational culture and operations
- internal or external economic climate
- political climate
- market focus/considerations
- environmental impacts of the business operation

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP620B Manage environmental management system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMASUP620 Manage environmental management system

Modification History

Release 1. Supersedes and is equivalent to PMASUP620B Manage environmental management system

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 include the ability to:

- obtain and analyse information from a range of sources to determine environmental aspects/interactions of plant and/or processes and potential impacts
- communicate, consult and negotiate effectively with internal and external stakeholders from a range of social, cultural and ethnic backgrounds, and physical and mental abilities
- use problem-solving skills to develop strategies and procedures to deal with identified environmental impacts and opportunities
- plan, write and evaluate a system of policies and procedures to implement the strategies and procedures into the organisation.

Knowledge Evidence

Evidence must be provided that demonstrates sufficient knowledge to interact with relevant personnel and be able to manage the environmental management system, including knowledge of:

- change management
- continuous improvement
- policy development, performance benchmarking and indicator development relevant to the organisation's activities
- environment sustainability as a 'whole system' approach
- implications/application of sustainable development for a business
- techniques to measure sustainability/environmental performance in terms of an organisation's impact on the environment and their ability to manage and minimise negative impacts
- application of the 'triple bottom line' (TBL) principle as a framework for measuring and reporting corporate performance against economic, social and environmental parameters
- management strategies and workplace practices that can be used to minimise or prevent these effects, including:
  - recycling and reusing
  - reducing amount of non-renewable resources used
  - reducing volume and/or concentration/intensity of pollutants made

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    - reducing emissions
    - improving housekeeping (e.g. using a broom instead of a hose, and using old rags for cleaning instead of toxic cleaners or water)
    - substituting materials (e.g. replacing toxic solvent-based coatings with water-based ones)
    - changing processes (e.g. mechanical cleaning, and re-design of products/procedures so that materials are used more efficiently)
    - tenders for the provision of goods and services that specify environmentally preferred selection criteria
- quality systems
- supply chain management
- relevant system analysis and design principles
- organisation business goals and strategic plans
- strategies to maximise opportunities
- environment impact minimisation strategies
- environmental issues, including as relevant to the organisation, water catchments, air/emissions, noise, ecosystems, habitat and waste minimisation
- relevant social sustainability issues, including corporate image, staff morale, customer loyalty and community engagement
- financial/market issues related to environmental management, including cost reduction, product differentiation/branding and identification of market potential
- organisation procedures, including those covering:
    - environmental management
    - safety, emergency and hazard control
    - procurement
- duty of care obligations
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
    - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
    - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.

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- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Simulation may be used for part only of this unit.
- It is not necessary for the recommended improvements in utility efficiency to be complete for the purposes of this unit.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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PMAWHS211 Prepare equipment for emergency response

Modification History

Release 1. Supersedes and is equivalent to PMAOHS211B Prepare equipment for emergency response

Application

This unit of competency covers the skills and knowledge required to undertake minor maintenance and other preparation of equipment for use in emergency situations.

This unit of competency applies to operators who are required to apply procedures to inspect and assemble equipment, undertake minor servicing, ensure equipment is ready and available for use, identify problems and take action.

Minor servicing includes one or more of:

- inspections
- lubrication
- pressure checks
- refilling
- other maintenance/servicing.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all items of equipment that are required for emergency response and all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify emergency equipment**	1.1	Locate emergency equipment
		1.2	Ensure access is provided to emergency equipment
2	**Inspect and assemble emergency equipment**	2.1	Inspect emergency equipment for faults or damage
		2.2	Secure/assemble couplings/connections and check operational condition
		2.3	Assemble equipment in accordance with manufacturer specifications
		2.4	Identify and report any missing or damaged components
3	**Carry out minor servicing of equipment in accordance with procedures**	3.1	Maintain and clean equipment
		3.2	Conduct servicing
		3.3	Ensure equipment functions
		3.4	Ensure equipment is 'made-ready' and stored in designated location
4	**Report and record equipment status**	4.1	Record and report equipment status
		4.2	Raise maintenance requests as required
		4.3	Undertake corrective actions as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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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

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, include one or more of the following:

- emergency procedures
- manufacturer specifications
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Emergency

Emergency response equipment includes one or more of the following:

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response equipment	• fire-extinguishers • fire hoses • fire blankets • pumps • branches, fittings and nozzles • foam equipment/units • personal protective equipment (PPE) • breathing apparatus • deluge/safety showers
Emergency situations	Emergency situations include one or more of the following: • accidents • fires • chemical or oil spills • gas leak or vapour emission • utilities failure • bomb scares

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS211B Prepare equipment for emergency response

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS211 Prepare equipment for emergency response

Modification History

Release 1. Supersedes and is equivalent to PMAOHS211B Prepare equipment for emergency response

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 include the ability to:

- assemble, inspect and service at least three (3) pieces of emergency response equipment
- check that equipment functions according to specifications
- store the emergency response equipment
- recognise early warning signs of equipment in need of servicing and take action
- complete records and forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types and application of emergency response equipment
- principles of operation of the emergency response equipment
- sources of information for equipment servicing schedules and processes
- hazards that may arise in the job/work environment
- hierarchy of controls.

Assessment Conditions

- 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
  - must 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.

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- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation’s policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS213 Undertake fire control and emergency rescue

Modification History

Release 2. Range of conditions and Knowledge Evidence amended.

Release 1. Supersedes and is equivalent to PMAOHS213B Undertake fire control and emergency rescue.

Application

This unit of competency covers the skills and knowledge required to function as a member of an emergency response team in order to respond to fire emergencies in onshore and/or offshore facilities.

This unit of competency applies to operators who, as a normal part of their duties, are required to work with team members to confirm required response to a fire emergency, select and use emergency equipment, and conduct search and rescue according to procedures.

The person undertaking this competency must be able to work alone and also within an environment which requires a high level of teamwork and interpersonal communication.

This unit of competency applies to any installation or facility, including but not limited to:

- onshore/offshore rig/installation
- island based facility
- floating production platform
- onshore production, processing and/or storage facility
- pipeline easement
- maintenance base.

This unit of competency may be delivered as part of an induction program.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Elements and Performance Criteria

Elements	Performance Criteria

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Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Respond to identified fire emergencies	1.1 Communicate the nature and extent of the fire emergency to team members in order to confirm required actions and responses 1.2 Apply knowledge of fire chemistry, fire characteristics and chemical hazards to assessment of the fire emergency and communicate the action required 1.3 Advise others of the nature and extent of the fire emergency from a knowledge of appropriate fire control strategies
2. Deploy fire emergency equipment	2.1 Utilise knowledge of the location and availability of fire-fighting equipment in the control of a fire emergency 2.2 Select and utilise appropriate personal protective equipment (PPE) and breathing apparatus 2.3 Apply appropriate fire-fighting and containment media in a safe and coordinated manner, in accordance with the manufacturer specifications and the organisation's procedures, to attack and control the fire emergency
3. Undertake search and rescue of affected areas	3.1 Confirm the need to conduct the search and rescue with team leaders or other nominated personnel 3.2 Conduct systematic primary and secondary searches 3.3 Search rooms and mark in accordance with the organisation's procedures 3.4 Lead occupants to safety 3.5 Locate injured personnel and transfer them in an appropriate manner to a safe location 3.6 Minimise the risk of further injury to affected personnel by applying casualty handling techniques and handing them to the care of medical personnel once clear of threat of fire 3.6 Communicate extent of injuries and casualty numbers to other support groups and request further assistance as required

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.

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Range of Conditions

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 • • 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, include one or more of the following: • emergency procedures • manufacturer specifications • work instructions • standard operating procedures (SOPs) • safe work method statements (SWMS) • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant
Control and rescue equipment	• Control and rescue equipment includes one or more of the following: • fire-extinguishing agents and water curtains • hoses • mobile extinguishers

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	• stretchers • PPE, such as: • chemical protective clothing • distress alarms • structural fire protective clothing • self contained breathing apparatus (SCBA) • communication equipment
Fire extinguishing media	• Fire extinguishing media includes one or more of the following: • water • foam • extinguishing powder • gaseous extinguishing agents • vapourising liquids • other fire-extinguishing substances
Fire-fighting strategies and tactics	• Fire-fighting strategies and tactics include one or more of the following: • direct attack • indirect attack • combination attack • exposure protection • internal/offensive attacks • confining the spread of fire • rescuing occupants • cooling the fuels • removal of fuels • interrupting the chemical chain reaction • exclusion of oxygen

Unit Mapping Information

Release 2. Supersedes and is equivalent to PMAOHS213 Undertake fire control and emergency rescue.

Release 1. Supersedes and is equivalent to PMAOHS213B Undertake fire control and emergency rescue.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS213 Undertake fire control and emergency rescue

Modification History

Release 2. Range of conditions and Knowledge Evidence amended.

Release 1. Supersedes and is equivalent to PMAOHS213B Undertake fire control and emergency rescue.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- assess fire chemistry, fire characteristics and chemical hazards to identify appropriate fire control strategies
- select and use appropriate control and rescue equipment and fire-fighting media
- communicate effectively under stress
- react quickly and effectively to changing circumstances
- respond to directives given by emergency team leaders and other team members
- identify hazardous circumstances and conditions within the emergency and take action
- apply casualty handling techniques.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- organisational procedures, including those covering:
  - incident, fire and accident
  - personal protective equipment (PPE)
- fire chemistry, fire characteristics and chemical hazards
- location and availability of fire-fighting equipment
- types and application of PPE and breathing apparatus
- types and application of fire-fighting and containment media, including:
  - water
  - foam
  - extinguishing powder
  - gaseous extinguishing agents
  - vapourising liquids
- casualty handling techniques.

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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- 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
  - must include the use of real fire in a simulated industrial environment, appropriate tools, equipment and safety gear
  - may use industry-based simulation for all of this unit, 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.

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- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
- appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS214 Undertake helicopter safety and escape

Modification History

Release 1. Supersedes and is equivalent to PMAOHS214B Undertake helicopter safety and escape

Application

This unit of competency covers the skills and knowledge required to exit a helicopter under abnormal conditions at sea.

This unit of competency applies to personnel who are required to undertake pre-flight preparation, escape from an inverted and/or submerged helicopter, don and successfully employ a life jacket, deploy safety and emergency equipment, deploy life rafts and help other survivors.

This unit of competency applies to all persons who regularly travel by helicopter, for example, to any of the following installations or facilities:

- offshore rig/installation
- floating facility (e.g. floating storage and offloading (FSO), floating production, storage and offloading (FPSO), and floating liquefied natural gas (FLNG))
- support vessel.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.		demonstrate achievement of the element.	
1	**Prepare for flight**	1.1	Listen to and follow pre-flight instructions from pilot or boarding controller
		1.2	Undertake pre-flight preparation, including wearing appropriate clothing and personal protective equipment (PPE), such as immersion suits and personal floatation devices (life jacket)
		1.3	Check own gear for suitability, including covered footwear, long trousers, and no loose items or hats
		1.4	Check the supplied safety gear is fitted and worn correctly
2	**Board the helicopter**	2.1	Approach helicopter as directed by the pilot or ground crew
		2.2	Put on seat belt and hearing protection
		2.3	Familiarise oneself with the helicopter layout
		2.4	Locate and identify all the safety equipment
		2.5	Locate and identify primary and secondary exits
		2.6	Listen to instructions on emergency egress from the aircraft
3	**Prepare for helicopter ditching**	3.1	Facilitate a controlled and safe egress from a ditched helicopter from a knowledge of helicopter layout, including the location and operation of emergency exits and equipment
		3.2	Secure personal items within the cabin prior to the evacuation to facilitate escape
		3.3	Check harnesses, seat belts and life jackets to ensure that they are properly fastened and secured prior to the ditching in order to minimise personal injury or gear failure
		3.4	Adopt the required brace position in order to allow for proper positioning prior to ditching

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		3.5	Acknowledge and respond to information communicated by the helicopter crew advising the nature and extent of the situation
4	**Undertake evacuation from the helicopter**	4.1	Identify appropriate primary and secondary escape routes in order to determine the locations through which the evacuation will be undertaken
		4.2	Wait until rotors have stopped turning and all movement has ceased
		4.3	Undo, in a controlled sequential manner, seat belts and harnesses to facilitate exit from the helicopter
		4.4	Deploy available safety equipment as instructed in order to assist the individual's sea survival after evacuation has been safely completed
		4.5	Acknowledge and respond to information communicated by the helicopter crew advising the nature and extent of the situation
5	**Facilitate recovery process**	5.1	Deploy position indicating devices and use appropriate signalling devices to facilitate the location of personnel by air-sea rescue group
		5.2	Use emergency supplies and equipment to ensure that available supplies are maximised and are able to meet the nature and extent of the emergency
		5.3	Apply appropriate helicopter/vessel rescue techniques to the recovery process
6	**Control hazards**	6.1	Identify and act upon potential hazards to minimise injury to personnel or damage to equipment
		6.2	Manage use of life raft by applying knowledge of life raft operation and requirements
		6.3	Apply suitable swimming techniques (whilst wearing life jacket) in the water in order to aid movement and boarding of the deployed life raft

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6.4 Rescue and recover persons in the water, minimising further potential for injury through the appropriate raft boarding and righting techniques

6.5 Employ suitable techniques, both in the life raft and in the water, in order to delay the onset of hypothermia

6.6 Assess and treat hypothermia, as required

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

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.

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Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Equipment

Equipment includes one or more of the following:

- helicopter simulators
- beacons
- life rafts
- distress flares
- life jackets
- emergency position-indicating radio beacon (EPIRB)

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- jammed or damaged survival equipment
- personal injury or injury to others
- trapped personnel
- loose or damaged equipment
- adverse weather conditions

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Hazards

Hazards include one or more of the following:

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- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- equipment failures
- equipment or product mass
- noise, rotational equipment or vibration
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- drowning and hypothermia
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS214B Undertake helicopter safety and escape

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS214 Undertake helicopter safety and escape

Modification History

Release 1. Supersedes and is equivalent to PMAOHS214B Undertake helicopter safety and escape

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 include the ability to:

- correctly fit and wear required personal emergency equipment
- respond instantly to pilot commands
- deploy life rafts or other emergency equipment
- orient oneself whilst upside down under water
- remove doors and/or windows from the aircraft
- extricate oneself from the aircraft
- correctly inflate life jacket
- locate and gain access to life raft where deployed
- locate other survivors and assist them
- apply rescue and recover procedures
- assess and treat hypothermia.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- helicopter escape techniques
- integral equipment functions to the level needed to act rationally and recognise and resolve problems
- hazards boarding and departing from helicopters under normal and emergency situations
- inverted and submerged helicopter escape techniques
- life jacket operation
- emergency equipment deployment techniques
- life raft operation and deployment
- rescue and recovery techniques

hypothermia prevention and reduction techniques (delaying and offsetting).

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Assessment Conditions

- Assessment for this unit of competency will involve a helicopter simulator. The unit will be assessed in as holistic a manner as is practical and the judgement of competence based on a holistic assessment of the evidence.
- Assessment may be integrated with the assessment of other relevant units of competency, for example:
  - PMAWHS215 Apply offshore facility abandonment and sea survival procedures and practices.
- Simulation should be based on actual helicopter ditchings and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3-D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life threatening situations, simulation may be used for the bulk of the training.
- 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
  - must include the use of a simulated helicopter ditching in real water of sufficient depth for complete immersion, appropriate tools, equipment and safety gear
  - may also use other 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.
- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS215 Apply offshore facility abandonment and sea survival procedures and practices

Modification History

Release 1. Supersedes and is equivalent to PMAOHS215B Apply offshore facility abandonment and sea survival procedures and practices

Application

This unit of competency covers the skills and knowledge required to abandon an offshore facility due to an on-site emergency and then survive at sea.

This unit of competency applies to personnel who are required to prepare for evacuation, select and deploy the appropriate safety equipment, launch available sea-going survival craft, assist in the survival of other persons, and activate location beacons or homing devices.

Offshore facilities include:

- offshore rig or platform
- floating facility (e.g. floating storage and offloading (FSO), floating production, storage and offloading (FPSO), and floating liquefied natural gas (FLNG)).

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

HSE

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for abandonment of the offshore facility**	1.1	Acknowledge alarm systems and proceed to muster and/or evacuation area
		1.2	Make evacuation area safe to ensure likelihood of personal injury or equipment damage is minimised
		1.3	Select and apply appropriate personal flotation device (life jacket) and other equipment
		1.4	Prepare for evacuation by applying appropriate methods and means of evacuation
2	**Abandon the offshore facility**	2.1	Deploy safety/rescue equipment in a safe and controlled manner before commencing abandonment
		2.2	Abandon the facility in accordance with relevant safety requirements and procedures
		2.3	Enter life raft or other survival craft
		2.4	Depart promptly from the facility using agreed techniques and in a safe and controlled manner
		2.5	Utilise safe water entry procedures
3	**Manage the survival process**	3.1	Identify and act upon potential hazards to minimise injury to personnel or damage to equipment
		3.2	Manage use of life raft by applying knowledge of life raft operation and requirements
		3.3	Apply suitable swimming techniques (whilst wearing life jacket) in the water in order to aid movement and boarding of the deployed life raft
		3.4	Rescue and recover persons in the water, minimising further potential for injury through the appropriate raft boarding and righting techniques

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		3.5	Employ suitable techniques, both in the life raft (or other survival craft) and in the water, in order to delay the onset of hypothermia
		3.6	Assess and treat hypothermia as required
4	**Facilitate the recovery process**	4.1	Deploy position indicating devices and use signalling devices to facilitate the location of personnel by air-sea rescue group
		4.2	Use emergency supplies and equipment to ensure that available supplies are maximised and are able to meet the nature and extent of the emergency
		4.3	Apply helicopter/vessel rescue techniques to the recovery process
5	**Control hazards**	5.1	Identify hazards relevant to the abandonment process
		5.2	Assess the risks arising from those hazards
		5.3	Implement measures to control those risks in line with procedures and duty of care

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

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Equipment

Equipment includes one or more of the following:

- life rafts and life raft deployment devices
- emergency descent devices
- position indicating devices
- signalling devices
- scramble nets and ladders
- helicopter lifting strops
- rescue harnesses

Routine problems

Routine problems must be resolved by applying known solutions.

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Routine problems are predictable and include one or more of the following:

- failure of safety equipment
- interaction with heat or debris
- prolonged exposure to the elements
- risk of hypothermia

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience
-

Non-routine problems must be reported according to according to relevant procedures.

Hazards

Hazards include one or more of the following:

- heat, smoke, darkness, or other atmospheric hazards
- structural hazards
- structural collapse
- equipment failures
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- injury from abandonment
- hypothermia
- drowning
- sunburn/sunstroke
- dehydration
- exacerbation of existing medical conditions
- other hazards that might arise

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS215B Apply offshore facility abandonment and sea survival procedures and practices

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS215 Apply offshore facility abandonment and sea survival procedures and practices

Modification History

Release 1. Supersedes and is equivalent to PMAOHS215B Apply offshore facility abandonment and sea survival procedures and 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, and include the ability to:

- recognise evacuation alarm
- select and use appropriate equipment
- prepare for evacuation and evacuate according to procedures and safety requirements
- deploy life rafts or other emergency equipment
- correctly inflate life jacket
- locate and gain access to life raft where deployed
- locate other survivors and assist them
- apply rescue and recover procedures
- assess and treat hypothermia.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- offshore facility abandonment procedures
- safe water entry procedures
- life jacket operation
- correct life raft and other survival craft deployment
- life raft operation and management
- boarding and righting a life raft
- safety and emergency equipment deployment techniques
- safety and emergency equipment operation
- use of life jackets
- hypothermia prevention and reduction techniques (delaying and offsetting)
- rescue and recovery techniques.

Assessment Conditions

- Assessment for this unit of competency will involve an abandonment simulation. Typically this will be achieved at an emergency evacuation training facility.

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- The unit will be assessed in as holistic a manner as is practical and the judgement of competence based on a holistic assessment of the evidence.
- Assessment may be integrated with the assessment of other relevant units of competency, for example:
  - PMAWHS214 Undertake helicopter safety and escape.
- Assessment will occur over a range of situations.
- Simulation should be based on an actual abandonment and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3-D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life threatening situations, simulation may be used for the bulk of the training.
- 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
  - must include the use of a simulated abandonment into real water of significant depth, using real equipment, such as personal flotation devices (PFDs) and rafts, appropriate tools, equipment and safety gear in a simulated environment
  - may also use other 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.
- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS221 Maintain first aid resources and records

Modification History

Release 1. Supersedes and is equivalent to PMAOHS221B Maintain First Aid supplies and records

Application

This unit of competency covers the skills and knowledge required to maintain first aid resources and related records.

This unit of competency applies to operators who are required to check availability and condition of supplies and equipment, obtain resources, clean equipment, dispose of waste, store resources and manage related records.

Depending on the workplace organisational structure the person might be responsible for ordering and purchasing equipment/resources or might obtain resources once they have been purchased.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members.

This unit of competency applies in a plant, remote facility or similar where there are first aid stations that require monitoring and re-supply.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Maintain resources**	1.1	Ensure and secure availability of adequate and relevant resources in accordance with workplace procedures
		1.2	Identify and obtain non-consumables required by workplace to maintain adequate readiness of supplies
		1.3	Identify and obtain consumables required by workplace to maintain adequate readiness of supplies
		1.4	Check stock, and regularly carry out inspection of equipment, for condition and currency
		1.5	Recover and clean equipment and dispose of waste safely according to legislative and site procedures
		1.6	Maintain resources in operational readiness in accordance with workplace procedures
		1.7	Store resources in correct manner to ensure their future operation and serviceability
2	**Record and manage records**	2.1	Complete relevant forms, as required, according to legislation and site procedures
		2.2	Store forms in accordance with legislative and site procedures
		2.3	Send relevant forms to appropriate bodies, file records appropriately, and undertake security of records according to workplace and legislative requirements
		2.4	Maintain confidentiality of records and information in accordance with privacy principles and statutory and/or organisational policies

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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

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, include one or more of the following:

- directives and/or guidelines from:
- Australian Resuscitation Council (ARC)
- National Health and Medical Research Council (NHMRC)
- Australian Standards
- Worksafe Australia
- emergency procedures
- work instructions

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- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

First aid resources

- First aid resources include:
- non-consumables, including one or more of the following:
- machines
- books
- reference materials
- safety data sheet (SDS) resources, including Work Health and Safety (WHS) Act
- legislative regulations
- stretchers
- communication systems
- relevant texts
- equipment
- consumables, including one or more of the following:
- first aid kits (bandages, tape, scissors, splinter removers, antiseptic, eye management, disinfectants, and emergency numbers and contacts)
- dressings
- ointments
- cold packs
- analgesics
- splints
- sharps disposal
- biohazardous waste
- medical grade oxygen
- bandages
- medication
- personal protection equipment
- eye wash
- disinfectants
- broncho-dialators
- cervical collars

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Forms Relevant forms include one or more of the following:

- incident/injury forms
- casualty history forms
- disease notification
- Workcover forms
- medication registers
- workers' compensation
- day book
- pre-participation records (sport)
- medical histories
- management records
- stock records
- infection control records
- training records

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS221B Maintain First Aid supplies and records

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS221 Maintain first aid resources and records

Modification History

Release 1. Supersedes and is equivalent to PMAOHS221B Maintain First Aid supplies and records

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 include the ability to:

- identify types and quantities of resource needs
- check stock and ensure adequate supplies of consumable and non-consumable resources are available in serviceable condition
- inspect condition and currency of resources and take action to ensure serviceability
- clean equipment, dispose of waste and store resources according to procedures
- complete forms and records and process according to procedures
- read and interpret product specifications, procedures, material labels and safety information.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- types of first aid consumables and non-consumables and any specifications for storage, cleaning and maintaining serviceability
- hazards that may arise in the job/work environment
- hierarchy of controls
- types and application of cleaning agents
- types of waste generated and disposal methods
- access to and relevance of safety data sheets (SDSs).

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations

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  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must 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 for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions

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    - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
    - being currently employed undertaking the type of work being assessed
    - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
    - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
    - conducting on-the-job training/assessments of the type of work being assessed
    - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS310 Investigate incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOHS310B Investigate incidents

Application

This unit of competency covers the skills and knowledge required to investigate incidents in the workplace. These incidents can vary from large to small, completely internal or partially externally coordinated. They include all types of incidents and emergencies (e.g. process, work health and safety (WHS), and environmental).

An incident is an event which causes, or could have caused, injury or illness; damage to plant, material or the environment; disruption to production or public alarm.

An incident is an unintended event, or an unintended consequence of an intended event, such as:

- fire and explosion
- loss of containment
- excursions above/below acceptable limits for emissions or plant conditions
- excursions above occupational hygiene or biological exposure limits
- non-compliance with regulatory requirements
- security breaches
- failure to follow procedures
- complaints
- vehicle incidents
- on/off-site incidents.

This unit of competency applies to operators who are required to secure the incident site, identify and examine a range of evidence to determine likely cause of incident, record evidence and analyse results to identify improvements to procedures/processes.

This unit of competency applies to experienced operators, technicians, supervisors, and those in similar roles who undertake internal investigations of minor incidents and/or who assist in external investigations of more major incidents.

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The exact definition of the scope of responsibility will depend on company policy, as will the level of the person undertaking these investigations. These investigations will be in accordance with company procedures for such investigations which will be consistent with any relevant regulations.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Review incident**	1.1	Undertake site inspections of incident scene
		1.2	Communicate with relevant personnel regarding specific aspects of the incident
		1.3	Monitor corrective action procedures
		1.4	Communicate changes to the situation to appropriate personnel
2	**Record investigation**	2.1	Establish and secure boundaries of the incident scene to prevent contamination of prospective evidence/exhibits.

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	process and results	2.2	Identify and interview persons relevant to the incident
		2.3	Identify and record evidence/exhibits at the scene prior to examination to ensure continuity
		2.4	Assess relevant information, documentation and evidence/exhibits
		2.5	Determine point of origin and most likely cause of incident
		2.6	Determine risk factors affecting the incident
		2.7	Identify and analyse a range of other possible causes
		2.8	Identify and utilise support services to investigate the incident scene
		2.9	Process, record and communicate information/evidence/exhibits, forms and documents to appropriate personnel following enterprise policies and procedures
3	**Make suggestions to improve incident handling and prevention**	3.1	Identify and assess tactical factors and resulting priorities occurring during the incident
		3.2	Formulate appropriate suggestions to improve handling of similar incidents based upon information available
		3.3	Identify incident cause and make recommendations to prevent a recurrence

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.

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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

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, include one or more of the following:

- job safety analysis (JSA) methods
- risk analysis/risk management procedures
- environmental risk/environmental management procedures
- personal protective equipment (PPE) and procedures
- emergency, fire and accident procedures
- hazard policies and procedures
- emergency procedures
- work instructions
- standard operating procedures SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

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Hazards and risks

Hazards and risk factors must be analysed in order to identify possible and likely causes of incidents.

Identifying hazards requires consideration of one or more of the following:

- hazards remaining from the original cause of the incident
- hazards arising from conducting an incident investigation
- hazards arising from working in conjunction with incident response personnel.

Identifying risks requires consideration of specific hazards, including the following:

- what level of harm can occur
- how harm can occur (various chains of events that could result in harm from the hazard)
- the likelihood that harm will occur

Evidence gained

Evidence gained as a result of investigations include one or more of the following:

- video tapes
- audio tapes
- drawings
- photographs
- plans
- manifests
- relevant documents
- records of interview
- personal notes
- physical evidence/materials
- debris
- soil

Support services

Support services include one or more of the following:

- pathologists
- forensic investigators
- coroner
- government medical officers
- interpreters
- technical services

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- legal officers
- undertakers
- forensic accountants
- information technology consultants
- document examiners
- handwriting experts
- financial organisations
- external law enforcement agencies

Interview strategies

The purpose of the interview is to establish what happened, not who is to blame. Interviews must be planned and require consideration of the following:

- location
- timing
- method (direct questioning and empathetic questioning)
- strategies for developing rapport
- who is being interviewed
- legal and policy requirements that might apply
- exclusion of leading questions
- avoidance of cross-examination

Legal and policy requirements might apply according to the status of the person being interviewed. Requirements include one or more of the following:

- the presence of a solicitor, independent person, family member or interpreter
- special consideration that applies because of disability, child, parent, age, gender, ethnicity and race

Post-investigation documentation

Post-investigation documentation include one or more of the following:

- statements
- proformas
- photographs
- tape/video recordings

Relevant personnel

The relevant personnel for incident investigation referrals will depend on the type of information being conveyed and the enterprise policies and procedures. Typically they will include one or more of the

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following:

- employer
- personnel directly involved in responding to the incident, including:
  - first response personnel
  - emergency response team members
  - emergency team leader
  - first aid officers
- other personnel with emergency team leader responsibilities

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS310B Investigate incidents

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS310 Investigate incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOHS310B Investigate incidents

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 include the ability to:
- recognise and analyse potential situations requiring action and implement corrective action
- secure incident site and collect and preserve evidence and records in accordance with legislative requirements
- analyse information and evidence to determine:
  - possible and likely causes of incident
  - improvements to emergency procedures
- plan and undertake interviews using appropriate communication (listening and questioning) and negotiation techniques
- demonstrate ethical behaviour and cultural awareness in undertaking investigation
- identify and liaise with specialists and support services
- complete forms and records

read and interpret procedures, reports, evidence and statements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident reporting and investigation
  - environmental protection
  - risk assessment/risk management
  - record keeping
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - risks
  - appropriate risk controls
- factors affecting incident initiation and development for predictable incident types for that plant
- scope and limitations of own role and responsibilities

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- appropriate personnel for referral and reporting.

Assessment Conditions

- 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 occur in an operational environment while conducting an incident investigation
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include an incident investigation using appropriate tools, equipment and safety gear
  - may use industry-based simulation for all or part of the unit particularly where, lack of opportunity is an issue. If simulation is the major source of evidence, then the simulation must replicate or enhance the situation of a real investigation.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS311 Lead emergency teams

Modification History

Release 1. Supersedes and is equivalent to PMAOHS311B Lead emergency teams

Application

This unit of competency covers the skills and knowledge required to lead and coordinate an emergency team, including deployment of resources at the scene of an emergency.

This unit of competency applies to operators who are required to assess the emergency and determine and coordinate responses, including rescue of personnel at risk, and containment of the emergency.

A person undertaking this unit of competency would be normally nominated to assume the responsibility of emergency team leader.

Typically they would be leading an incident response or fire emergency response team.

This unit of competency applies in any of the following installations or facilities:

- onshore/offshore rig/installation
- island based facility
- floating facility (e.g. floating storage and offloading (FSO), floating production, storage and offloading (FPSO), and floating liquefied natural gas (FLNG))
- onshore production, processing and/or storage facilities
- pipeline easements
- maintenance bases.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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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 the nature and extent of the emergency**	1.1	Determine the nature and extent of the emergency in order to ascertain the level and degree of the emergency and what required actions and management strategies should be implemented
		1.2	Communicate the nature and extent of the emergency in a timely manner to other nominated emergency or facility personnel
		1.3	Facilitate the rescue of personnel at risk, control/extinguish the emergency and make the affected area safe through application of rescue and control strategies
		1.4	Ensure all team members are adequately instructed, protected and equipped to function safely and effectively in the emergency situation through the application of personal protective equipment (PPE)
2	**Effect rescue of personnel at risk**	2.1	Instruct rescue teams to effect the search for, and rescue of, personnel identified as being at risk
		2.2	Allocate resources to potentially exposed or threatened personnel and assets, and minimise the likelihood of escalation of the risk
3	**Confine the spread of emergency**	3.1	Initiate control/extinguishing responses promptly in order to eliminate the emergency
		3.2	Render affected areas safe in order to prevent the likelihood of further re-occurrence, or threat to personnel or assets
		3.3	Provide feedback to facility or other nominated personnel concerning the status of the emergency

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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

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, include one or more of the following:

- fire management systems
- communication systems
- relevant facility emergency management and contingency response plans
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)

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- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Control and rescue equipment

Control and rescue equipment includes one or more of the following:

- fire-extinguishers
- fire hoses
- mobile extinguishers
- fire blankets
- pumps
- branches, fittings and nozzles
- foam equipment/units
- PPE
- self contained breathing apparatus (SCBA)
- communication equipment
- stretchers
- deluge/safety showers

Fire-fighting media

Fire-fighting media includes one or more of the following:

- water
- foam
- extinguishing powder
- gaseous extinguishing agents
- vapourising liquids
- other fire-extinguishing substances

Emergency strategies and tactics

Emergency strategies and tactics include one or more of the following:

- direct attack
- indirect attack
- combination attack
- exposure protection
- internal/offensive attacks
- confining the spread of incident
- rescuing occupants
- cooling the fuels
- removal of fuels
- interrupting the chemical chain reaction
- exclusion of oxygen

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Emergency situations

Emergency situations include one or more of the following:

- accidents
- fires
- chemical or oil spills
- gas leak or vapour emission
- utilities failure
- bomb scares

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS311B Lead emergency teams

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS311 Lead emergency teams

Modification History

Release 1. Supersedes and is equivalent to PMAOHS311B Lead emergency teams

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 include the ability to:

- communicate clearly and unambiguously with team members, management and other personnel under stress
- lead and manage/supervise team members in emergency situations
- analyse risk, allocate resources and prioritise activities
- select and use appropriate control/fire-fighting media and rescue equipment
- interpret information about changing conditions, hazards and individuals' needs and make prompt decisions about appropriate action and allocation of resources
- read and interpret procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - relevant facility emergency management and safety systems
  - emergency communication systems
  - emergency response plans
- fire chemistry, fire characteristics and/or chemical hazards
- location and availability of response equipment
- types and application of personal protective equipment (PPE) and breathing apparatus
- types and application of fire-fighting/emergency response and containment media
- hazard identification, assessment and control of risk
- principles and procedures of self contained breathing apparatus (SCBA)
- search and rescue techniques (including self rescue techniques)
- teamwork principles and techniques
- types and impact of emergency tactics
- casualty handling techniques.

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Assessment Conditions

- 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 cover the range of situations which might be expected to be encountered
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include a simulated emergency utilising appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS312 Command the operation of survival craft

Modification History

Release 1. Supersedes and is equivalent to PMAOHS312B Command the operation of survival craft

Application

This unit of competency covers the skills and knowledge required to control and coordinate the use of totally enclosed motor propelled survival craft (TEMPSC) to facilitate safe evacuation and recovery of personnel.

This unit of competency applies to operators who are required to coordinate the evacuation/muster, boarding and launch of TEMPSC; operate, manoeuvre and navigate TEMPSC; operate communications and navigation systems and other safety/rescue equipment; and monitor and respond to hazards and other problems.

This unit of competency applies to offshore installations and facilities where evacuation procedures involve the use of water craft and survival at sea.

Offshore facilities include:

- offshore rig or platform
- floating facility (e.g. floating storage and offloading (FSO), floating production, storage and offloading (FPSO), and floating liquefied natural gas (FLNG)).

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

Certain maritime licences may be required, such as a ‘coxswain’s ticket’. Check local regulations for details.

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

Pre-requisite Unit

Nil

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Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Control muster**	1.1	Convey information from the control centre concerning the nature and scope of the emergency
		1.2	Confirm and verify personnel gathered at the muster point against current person-on-board lists
		1.3	Confirm personnel and craft readiness status with the incident controller
		1.4	Maintain control of the muster point in order to ensure that an orderly and safe evacuation is achieved
2	**Conduct organised deployment of TEMPSC**	2.1	Direct mustered personnel to board the craft to procedures
		2.2	Check all personnel to ensure that they are safely secured within craft and all required safety equipment has been verified as operational prior to launch
		2.3	Launch craft to procedure, ensuring the safety of all personnel is maintained during the launch
		2.4	Manoeuvre the launched craft away from the facility/ installation to a pre-determined location, safe holding area or distance
		2.5	Utilise all equipment to assist in the safe operation of the craft
		2.6	Communicate with nominated agencies and services in order to convey the position and condition of craft and personnel and to assist in the recovery of the craft

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3	**Provide leadership in TEMPSC deployment and welfare of personnel**	3.1	Take command of the TEMPSC and oversight the welfare and safety of those on board
		3.2	Determine disposition of personnel within the TEMPSC and see to the allocation of resources
		3.3	Communicate with other survival craft and base station in order to facilitate self rescue and recovery of others in the affected area
		3.4	Prepare craft and personnel for safe recovery by the appropriate methods
4	**Control hazards**	4.1	Identify hazards arising from the abandonment
		4.2	Assess the risks arising from those hazards
		4.3	Implement measures to control those risks in line with procedures and duty of care
5	**Respond to problems**	5.1	Identify possible problems
		5.2	Determine problems needing action
		5.3	Determine possible problem causes
		5.4	Rectify problem using solution within area of responsibility
		5.5	Follow through items initiated until final resolution has occurred
		5.6	Report problems outside area of responsibility to designated person

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.

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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

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, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running/evacuation of the facility

Equipment

Equipment includes the following:

- TEMPSC
- launch and retrieval systems
- personal protective equipment (PPE)
- emergency descent devices
- position indicating devices
- signalling devices

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- scramble nets and ladders
- helicopter lifting strops
- rescue harnesses
- TEMPSC ‘integral equipment’

Hazards

Hazards must be identified and controlled. Identifying hazards requires consideration of both pre- and post-launch hazards.

Pre-launch hazards include of one or more of the following:

- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- flammability and explosivity
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Post-launch hazards include one or more of the following:

- sea sickness
- slippery surfaces
- injuries sustained from TEMPSC launch
- personnel recovery procedures

Routine problems

Routine problems are predictable and have known solutions and include the following:

- a range of weather conditions
- communication systems failures
- malfunctioning equipment

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- unaccounted for personnel
- launching difficulties
- casualties
- injuries/people freaking out
- loss of command situation

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS312B Command the operation of survival craft

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS312 Command the operation of survival craft

Modification History

Release 1. Supersedes and is equivalent to PMAOHS312B Command the operation of survival craft

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 include the ability to:
- identify hazards and apply control measures
- communicate clearly and unambiguously with personnel under stress
- initiate emergency response plans and evacuation, coordinate activities and manage personnel
- launch, operate, navigate emergency craft according to procedures
- oversee the welfare and safety of people on board emergency craft
- oversee application of procedures and use of equipment to facilitate safe recovery
- read and interpret procedures

interpret information about changing conditions, hazards and individuals' needs and make prompt decisions about action and allocation of resources.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- organisational procedures relevant to the launching and command of a totally enclosed motor propelled survival craft (TEMPSC)
- hazards that may arise in deployment of TEMPSC and their control
- principles involved in the launching, handling and recovery of survival craft
- factors to be considered during the operation of survival craft in all types of weather conditions
- types and operation of equipment typically contained within a survival craft
- emergency response plans and procedures
- evacuation procedures and alarms
- location of safety equipment and survival craft, such as TEMPSC

procedures for loss of command situations.

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Assessment Conditions

- Assessment for this unit of competency will be in a simulated environment. Simulation should be based on survival craft and launching systems relevant to the particular facility/installation and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3-D virtual reality interactive systems.
- The unit will be assessed in as holistic a manner as is practical and the judgement of competence based on a holistic assessment of the evidence.
- Assessment will occur over a range of situations which will include disruptions to normal and planned operations.
- Assessment may be integrated with the assessment of other relevant units of competency, for example:
  - PMAWHS215 Apply offshore facility abandonment and sea survival procedures and practices.
- The collection of performance evidence:
  - will use simulated situations
  - must provide evidence of the ability to control a TEMPSC and to perform over the range of situations which might be expected to be encountered in evacuation and recovery situations
  - must include the deployment of TEMPSC in a simulated environment.
- 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.
- 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS320 Provide advanced first aid response

Modification History

Release 1. Supersedes and is equivalent to PMAOHS320C Provide advanced First Aid response

Application

This unit of competency covers the skills and knowledge required to provide advanced first aid response, including life support.

This unit of competency applies to operators who are required to assess the situation, manage casualties, coordinate first aid activities until medical or other assistance arrives, and support other first aid providers.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with shift team members and other internal and external personnel, as appropriate.

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

Pre-requisite Unit

HLTAID003 Provide first aid

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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• Assess the situation	• Identify physical hazards and minimise according to work health and safety (WHS) requirements and workplace procedures • Assess risks to first aider and others and determine response to ensure prompt control of situation • Ascertain and prioritise need for emergency services/medical assistance and undertake triage where required
• Manage the casualty	• Seek agreement for management of casualty injury/illness from appropriate person, where relevant • Determine welfare procedure and implement according to casualty needs • Control effects of injury and determine first aid management to meet the needs of the casualty and situation • Administer medication according to relevant legislation and manufacturer/supplier instructions and subject to casualty regime • Monitor and respond to casualty condition in a timely manner in accordance with effective first aid principles • Correctly operate life support equipment, where appropriate, according to relevant legislation and manufacturer/supplier instructions • Finalise management according to casualty needs and first aid principles
• Coordinate first aid activities until arrival of medical assistance	• Identify available resources and establish communication links with emergency management services and medical assistance personnel as required • Deploy correct amount of resources to appropriate locations in an effective manner to ensure timely arrival of required resources • Document provision of resources and recommend modifications • Monitor management of casualties in accordance with first aid principles and workplace procedures • Coordinate evacuation of casualties according to worksite evacuation procedures • Arrange support service for personnel involved in the incident in accordance with workplace principles and procedures
• Communicate essential incident details	• Maintain communication with relevant personnel using media and equipment • Communicate first aid information with other providers/carers to meet their needs and in accordance with workplace procedures

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- Provide information calmly to reassure casualty, adopting a communication style to match casualty level of consciousness

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

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, include one or more of the following:

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- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Injuries and conditions managed

Injuries and conditions managed include one or more of the following:

- abdominal injuries
- allergic reactions
- bleeding
- burns (thermal, chemical, friction and electrical)
- cardiac conditions
- chemical contamination
- cold injuries
- crush injuries
- dislocations
- drowning
- envenomation (snake, spider, insect and marine bites)
- environmental conditions (hypothermia, dehydration and heat stroke)
- epilepsy, diabetes, asthma and other medical conditions
- eye injuries
- fractures
- head injuries
- insect/marine bites
- minor skin injuries
- neck and spinal injuries
- needle stick injuries
- poisoning and toxic substances
- respiratory management of asthma and/or choking
- shock
- smoke inhalation
- soft tissue injuries, including sprains, strains, dislocations
- substance abuse and illicit drugs
- unconsciousness, including not breathing and no pulse

First aid

First aid management includes the following:

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management

- administration of analgesic gases
- administration of medications
- cardiopulmonary resuscitation (CPR)
- semi-automatic external defibrillator (SAED)
- expired air resuscitation (EAR)
- infection control
- bleeding control
- airway management
- delivery of oxygen
- care of unconscious

First aid management requires consideration of the following:

- location and nature of the workplace
- the environmental conditions (e.g. electricity, biological risks, weather and motor vehicle accidents)
- location of emergency service personnel
- the use and availability of first aid equipment and resources
- infection control
- allergies to medications

Medications include one or more of the following:

- oxygen
- pain relief - paracetamol in accordance with state and territory legislation, analgesics (penthrane, entonox - used in mining industry)
- asthma - aerosol bronchodilators: casualty's own or from first aid kit in accordance with state and territory legislation
- severe allergic reactions - adrenaline: subject to casualty's own regime
- heart attack - aspirin

First aid management must be documented and include, as appropriate, the following:

- time
- fluid intake/output
- blood
- vomit
- faeces
- urine
- administration of medication, including time, date, person administering, dose

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- vital signs

First aid principles

Established first aid principles include the following:

- checking the site for danger to self, casualty and others minimising the danger
- checking and maintaining casualty's airway, breathing and circulation

Resources and equipment

Resources and equipment, appropriate to the risk, include one or more of the following:

- blood pressure cuff
- oxygen resuscitation/cylinders
- defibrillation units
- pressure bandages
- thermometers
- injections
- backboards
- stretchers
- soft bag resuscitator
- first aid kits
- eyewash
- thermal blankets
- pocket face masks
- rubber gloves
- dressing
- spacer device
- cervical collars

Communication systems

Communication systems include one or more of the following:

- mobile phones
- satellite phones
- HF/VHF radio
- flags
- flares
- two-way radio
- email
- electronic equipment
- other communication methods/equipment defined in organisation procedures

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Hazards and risks Hazards and risks must be identified and controlled.

Hazards include one or more of the following:

- unavailable first aid equipment (oxygen cylinders and defibrillator)
- bodily fluids
- other hazards associated with casualty management process
- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised/other personnel or bystanders
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Identifying risks requires consideration of specific hazards, including the following:

- what level of harm can occur
- how harm can occur (various chains of events that could result in harm from the hazard)
- the likelihood that harm will occur

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS320C Provide advanced First Aid response

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS320 Provide advanced first aid response

Modification History

Release 1. Supersedes and is equivalent to PMAOHS320C Provide advanced First Aid response

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 include the ability to:

- assess and monitor casualty's need for emergency services, medical assistance and other support
- apply first aid management techniques
- select and use first aid resources and equipment
- identify hazards and risks to self, casualty and others and apply control measures
- use electronic and manual communication systems
- complete workplace forms
- accurately document casualty conditions and treatment
- coordinate communications, resources and incident management activities
- communicate clearly and unambiguously with personnel under stress
- interpret information about changing conditions, hazards and individuals' needs, and make prompt decisions about appropriate action and allocation of resources.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - risks
  - appropriate risk controls
- basic anatomy and physiology
- respiratory/circulatory system
- basic toxicology

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- types and application of medications used in first aid.

Assessment Conditions

- 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 occur over a range of situations which include typical disruptions to normal, smooth operations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the demonstration of first aid response using appropriate tools, equipment and safety gear
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should 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 reflecting 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
  - walk-throughs
  - pilot plant operation
  - 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.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS321 Provide first aid response in remote and/or isolated area

Modification History

Release 1. Supersedes and is equivalent to PMAOHS321B Provide First Aid response in remote and/or isolated area

Application

This unit of competency covers the skills and knowledge required, in a remote and/or isolated area, to provide first aid response, including life support, and to manage casualty(s) until evacuation of the casualty(s) by emergency services.

This unit of competency applies to operators who are required to assess the situation, manage casualty(s), provide first aid until medical or other assistance arrives while factoring in conditions and contingencies that may arise in a remote/isolated area.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

HLTAID003 Provide first aid

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

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

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1	**Identify possible contingencies at remote/isolated area**	1.1	Undertake preparation for isolated travel or work accounting for expected contingencies according to procedures/policies
2	**Handle casualty's immediate condition**	2.1	Assess casualty's condition and determine response in order to minimise hazards and determine need for medical assistance
		2.2	Monitor and respond to casualty's condition in accordance with appropriate first aid principles
		2.3	Reassure and support casualty during the wait for medical assistance
		2.4	Ensure and determine casualty's comfort by establishing and explaining the nature of the illness/injury and the management procedures
		2.5	Undertake to provide shelter from elements in accordance with environmental conditions
3	**Liaise with external medical support**	3.1	Document condition of the casualty over time to assist ongoing management
		3.2	Establish communication links to medical services to ensure prompt control action is undertaken
		3.3	Undertake administration of medication under medical instruction, using relevant communication equipment
		3.4	Evaluate environmental and casualty's condition to determine transportation requirements of casualty to medical assistance
		3.5	Provide assistance in the evacuation of casualty by emergency services as required
4	**Evaluate the incident**	4.1	Evaluate management of the incident and where required develop an action plan in consultation with relevant parties
		4.2	Participate in debriefing/evaluation to improve future

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operations and address individual's needs

4.3 Provide access to bona fide critical stress facilitators where required/requested

4.4 Implement site management/procedures and evaluate in accordance with risk assessment

4.5 Formulate contingency planning and review to identify and select alternative management principles

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

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.

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Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Injuries and conditions managed

Injuries and conditions managed include one or more of the following:

- abdominal injuries
- allergic reactions
- bleeding
- burns (thermal, chemical, friction and electrical)
- cardiac conditions
- chemical contamination
- cold injuries
- crush injuries
- dislocations
- drowning
- envenomation (snake, spider, insect and marine bites)
- environmental conditions (hypothermia, dehydration and heat stroke)
- epilepsy, diabetes, asthma and other medical conditions
- eye injuries
- fractures
- head injuries
- minor skin injuries
- neck and spinal injuries
- needle stick injuries
- poisoning and toxic substances
- respiratory management of asthma and/or choking
- shock
- smoke inhalation
- soft tissue injuries, including sprains, strains, dislocations

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- substance abuse and illicit drugs
- unconsciousness, including not breathing and no pulse

First aid management

First aid management includes the following:

- administration of analgesic gases
- administration of medications
- cardiopulmonary resuscitation (CPR)
- semi-automatic external defibrillator (SAED)
- expired air resuscitation (EAR)
- infection control
- bleeding control
- airway management
- delivery of oxygen
- care of unconscious

First aid management requires consideration of the following:

- location and nature of the workplace
- the environmental conditions (e.g. electricity, biological risks, weather and motor vehicle accidents)
- location of emergency service personnel
- the use and availability of First Aid equipment and resources
- infection control
- allergies to medications

Medications include one or more of the following:

- oxygen
- pain relief - paracetamol in accordance with state and territory legislation, analgesics (penthrane, entonox - used in mining industry)
- asthma - aerosol bronchodilators: casualty's own or from first aid kit in accordance with state and territory legislation
- severe allergic reactions - adrenaline: subject to casualty's own regime
- heart attack - aspirin.

First aid management must be documented and include, as appropriate, the following:

- time
- fluid intake/output
- blood

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- vomit
- faeces
- urine
- administration of medication, including time, date, person administering, dose
- vital signs

First aid principles

Established first aid principles include the following:

- checking the site for danger to self, casualty and others minimising the danger
- checking and maintaining casualty's airway, breathing and circulation

Resources and equipment

Resources and equipment, appropriate to the risk, include one or more of the following:

- blood pressure cuff
- oxygen resuscitation/cylinders
- defibrillation units
- pressure bandages
- thermometers
- injections
- backboards
- stretchers
- soft bag resuscitator
- first aid kits
- eyewash
- thermal blankets
- pocket face masks
- rubber gloves
- dressing
- spacer device
- cervical collars

Communication systems

Communication systems include one or more of the following:

- mobile phones
- satellite phones
- HF/VHF radio
- flags
- flares

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- two-way radio
- email
- electronic equipment
- other communication methods/equipment defined in organisation procedures

Hazards and risks Hazards and risks must be identified and controlled.

Hazards include one or more of the following:

- unavailable first aid equipment (oxygen cylinders, defibrillator)
- bodily fluids
- other hazards associated with casualty management process
- heat, smoke, darkness, dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised/other personnel or bystanders
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Identifying risks requires consideration of specific hazards, including the following:

- what level of harm can occur
- how harm can occur (various chains of events that could result in harm from the hazard)
- the likelihood that harm will occur

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Travel considerations

Travel considerations include the following:

- severity of injury
- time required for medical assistance to arrive

Note: movement might hinder rescue procedures.

Preparation for travel includes the following:

- selection of relevant communication equipment
- relevant first aid supplies and resources to cater for environmental conditions

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS321B Provide First Aid response in remote and/or isolated area

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS321 Provide first aid response in remote and/or isolated area

Modification History

Release 1. Supersedes and is equivalent to PMAOHS321B Provide First Aid response in remote and/or isolated area

Performance Evidence

Knowledge Evidence

Assessment Conditions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS420 Develop first aid procedures and manage resources

Modification History

Release 1. Supersedes and is equivalent to PMAOHS420B Develop First Aid procedures and manage resources

Application

This unit of competency covers the skills and knowledge required to manage the development and implementation of a workplace first aid system.

This unit of competency applies to operators who are required to plan and coordinate processes to develop new or review existing first aid procedures, communicate procedures to others, and ensure training and professional development needs are addressed.

This unit of competency applies to all work environments and sectors within the industry.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Develop effective organisational systems**	1.1	Coordinate participative processes to identify and agree on outcomes
		1.2	Initiate processes to plan, implement and control systems to achieve identified outcomes

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		1.3	Implement/develop policies and procedures consistent with procedures.
		1.4	Develop and maintain processes for effective conduct of first aid responsibilities
		1.5	Distribute changes in policy and procedures to relevant personnel using appropriate communication channels
		1.6	Undertake review of procedures/policies, and report recommendations as required
2	**Implement effective first aid training and practice**	2.1	Maintain links with first aid bodies, professionals and clinical organisations/bodies
		2.2	Maintain currency of first aid and personal qualifications in accordance with industry and organisational requirements
		2.3	Review and validate risks against procedures
		2.4	Coordinate, plan, implement and evaluate additional training in a timely manner to meet the needs of individuals and the worksite
		2.5	Ensure practices are consistent with current standards and policies
		2.6	Coordinate planning for response to major incidents and make known to the work group in readiness for implementation
3	**Maintain up-to-date professional development of knowledge and skills**	3.1	Undertake self-education process in accordance with workplace principles and opportunities
		3.2	Access links with various professional first aid bodies and organisations to maintain currency in the field
		3.3	Access and communicate promptly relevant information to work group, and maintain certification in accordance with workplace procedures and legislation

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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

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, include one or more of the following:

- directives and/or guidelines from:
  - Australian Resuscitation Council (ARC)
  - National Health and Medical Research Council (NHMRC)
  - Australian Standards
  - Worksafe Australia
- emergency procedures

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- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Systems

A first aid system must be supported by systems and procedures in related areas of the organisation, including the following:

- ordering (e.g. magazines, books and supplies)
- skills updating (e.g. attending conferences/workshops and reading publications)
- professional development and networking (e.g. attending conferences/workshops and reading publications)
- communication
- technology
- training and assessment, and refresher training
- IT
- record keeping
- health safety and environment
- hazard and risk management

Professional development

Professional development includes one or more of the following:

- accessing up to date information about industry practices, codes and certification requirements via:
  - meetings
  - seminars
  - conferences
  - membership of professional first aid bodies
- education/self-education processes, such as:
  - attendance at relevant seminars and conferences
  - maintenance of professional library
  - membership of first aid bodies
  - formal training
  - supervised or unsupervised practice to maintain currency of competence

First aid bodies

First aid bodies and professional and clinical organisations/bodies include

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and clinical organisations	the following: • Australian Resuscitation Council (ARC) • International Liaison Committee on Resuscitation (ILCOR) • support groups • registered providers/authorities

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS420B Develop First Aid procedures and manage resources

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS420 Develop first aid procedures and manage resources

Modification History

Release 1. Supersedes and is equivalent to PMAOHS420B Develop First Aid procedures and manage resources

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 include the ability to:

- communicate effectively orally and in writing
- coordinate participative processes
- plan for and develop procedures incorporating input from others
- evaluate policy/procedures and make recommendations for improvement
- determine the need for training and professional development and coordinate appropriate responses
- manage own professional development and currency of certification
- monitor the implementation of the system and make amendments, including:
  - correct application of procedures
  - alignment to current first aid practice/standards
  - need for information/communications
  - integration with other systems/procedures
- write procedures, including technical and numerical information.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - risks
  - appropriate risk controls
- regulatory framework
- state and territory regulations relating to currency of skills and knowledge

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- training and assessment processes and methods
- identifying and evaluating training/assessment options
- techniques for identifying skills/training needs
- national training agenda
- the role of professional development
- first aid principles and practices.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of developing new or reviewing existing first aid procedures which satisfy the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of developing new or reviewing existing first aid procedures which satisfy the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment

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  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS502 Contribute to safety case

Modification History

Release 1. Supersedes and is equivalent to PMAOHS502B Contribute to safety case

Application

This unit of competency covers the skills and knowledge required to contribute to the development and submission of a safety case in accordance with the work health and safety (WHS) legislation.

This unit of competency applies to senior operators, supervisors, owners, managers and those in similar roles who are required to apply knowledge of all relevant workplace systems to contribute to identifying and consulting on issues, interpreting data and consolidating findings, writing the safety case and preparing it for submission.

The unit of competency will apply within the individual's area of managerial responsibility which may be an entire enterprise or department of an enterprise. Specific roles and responsibilities will vary from enterprise to enterprise.

The individual is expected to work as part of the team that is made up of senior management, engineers, technical and safety specialists. However, the individual is required to demonstrate competence in all aspects of the unit.

The safety case must comply with the requirements for safety cases in the jurisdiction for which it is being prepared. It will typically apply to major hazard facilities.

This unit of competency may be applied with the requirements for hazard identification, analysis and control, and may also require risk management.

This unit of competency applies to process manufacturing plants and other facilities in which the use of machinery, equipment, operational procedures, products or materials require the preparation of a safety case as prescribed by the relevant regulations. Relevant regulations may vary between jurisdictions.

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

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Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Identify and verify issues for presentation**	1.1	Consult with the senior management as well as all relevant departments in a collaborative and objective manner
		1.2	Identify and verify issues that are required for the presentation
		1.3	Refer to the relevant legislation/regulation, and if necessary, clarify requirements from the relevant government departments
2	**Interpret data collected**	2.1	Interpret and analyse data collected
		2.2	Use appropriate database for the enterprise to assist in the analysis
		2.3	Prepare and distribute analysis and discuss with relevant personnel within the enterprise
3	**Write up a safety case as part of the safety case team**	3.1	Consolidate findings and obtain agreements from relevant personnel as to the information to be included in the case
		3.2	Refer to regulatory and format requirements that are stipulated by the authority

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4	**Prepare the safety case**	4.1	Prepare the case for submission in accordance with required procedures
		4.2	Follow up with the relevant contact in the authority
		4.3	Report response from the authority in accordance with enterprise procedures

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

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.

Safety management

The safety management system for a facility must specify the following

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system requirements

or be otherwise compliant with the relevant regulations:

- the critical equipment (including process equipment, machinery, electrical and instrumentation systems) that relate to, or may effect, the safety of the facility
- the systems in place to ensure that the equipment is fit for the purpose:
  - for which it is used in normal operating conditions
  - to the extent that it is intended to function or be used in an emergency

Participative arrangements must also be included in the safety management system, including the following:

- mechanisms to ensure WHS procedures are followed
- information sessions on existing or new issues
- meetings between employer and employees or representatives
- providing access to relevant workplace information
- use of clear and understandable language

Enterprise policies and procedures

Enterprise policies and procedures include those that directly or indirectly cover issues relating to incidents. Depending on the organisation these will typically include the following:

- hazard policies and procedures
- standard operating procedures
- safety procedures
- work instructions
- emergency, fire and accident procedures
- personal protective equipment (PPE) and procedures

Hazards

Hazards include one or more of the following:

- heat, smoke, dust, lack of visibility or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration

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- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Appropriate controls

Implementing appropriate controls requires application of the hierarchy of control to reduce hazards to as low as reasonably practicable (ALARP):

1. elimination
2. substitution
3. isolation
4. engineering controls
5. administrative controls
6. use of PPE

Participative arrangements

Participative arrangements will involve at least one of the following:

- following WHS procedures
- information sessions on existing or new issues
- meetings between employer and employees or representatives
- access to relevant workplace information
- use of clear and understandable language

Safety case

The safety case includes information regarding:

- person responsible for operation of the facility
- person responsible for the safety case
- a description of the facility
- formal safety assessment of the facility
- the safety management system
- reporting of incidents
- address where records are kept

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- safety policy
- organisational structure and responsibilities
- published technical standards applied to or used
- the design, construction, installation, operation and maintenance of the facility, and any modifications to the facility
- the control system to be used for the facility
- the type of machinery and equipment used at the facility
- the permit to work system
- the emergency response plan in relation to incidents
- the emergency communication system
- the key performance indicators
- the system for incident recording, investigation and reviewing training
- other information as required from time to time by the relevant regulation

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS502B Contribute to safety case

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS502 Contribute to safety case

Modification History

Release 1. Supersedes and is equivalent to PMAOHS502B Contribute to safety case

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 hazard controls
- communicate with internal and external stakeholders to:
  - consult on and verify issues
  - validate the content of the safety case
  - liaise with the authority
  - report on the response from the authority
- interpret data and consolidate findings
- interpret and apply legislative and regulatory requirements to the development and submission of the safety case
- write the safety case, or relevant portions of it.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures and systems and how they relate to the safety case, including those covering:
  - work permit systems
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - record keeping
  - purchasing of supplies and equipment
  - maintenance of plant and equipment
  - training and assignment of staff to safety critical work
- requirements set by relevant Acts and/or regulations specific to the state or territory in which the relevant facility is located
- hierarchy of control
- hazard analysis (e.g. hazard and operability study (HAZOP)) and hazard control methodology.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace, contributing to the initial development of a safety case, or to the major review of an existing safety case.
- Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Simulation may be used for part only of the assessment evidence for this competency.
- Knowledge evidence may be collected concurrently with performance evidence 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.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed

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- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMAWHS511 Manage emergency incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOHS511A Manage emergency incidents

Application

This unit of competency covers the skills and knowledge required to manage and coordinate an emergency response.

This unit of competency applies to operators who are required to assess the magnitude and impact of the emergency, gather and coordinate all of the necessary emergency response personnel and equipment and direct their implementation, and initiate all of the necessary communication responses, both within and outside the facility.

In a typical scenario the person in charge of a facility undertakes the management, coordination and response to emergency situations within the facility.

Typical facilities could include:

- onshore/offshore installation/rig
- floating facility (e.g. floating storage and offloading (FSO), floating production, storage and offloading (FPSO), and floating liquefied natural gas (FLNG))
- onshore hydrocarbons production, processing and/or storage facilities
- pipeline and related facilities
- chemicals manufacturing plant.

This unit of competency applies to persons who would normally be in control or command of the facility or be required to deputise in this role.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Collect and assess emergency information**	1.1	Ascertain the scope and severity of the emergency as quickly as possible, from information received from alarms, personnel and other means
		1.2	Collate and assess information on emergency
		1.3	Develop responses to the information received based on emergency response planning
2	**Implement emergency response strategies**	2.1	Develop, or promptly implement, on-site strategies in order to combat the emergency
		2.2	Monitor continuously information flows relating to the emergency in order to evaluate the effectiveness of the implemented strategy
		2.3	Coordinate team activities and resource allocation and direct them to meet the identified emergency
		2.4	Delegate authority to appropriate personnel as the situation warrants
3	**Liaise with emergency control**	3.1	Collate and communicate information relating to the emergency to emergency control centre
		3.2	Request external assistance if required
		3.3	Coordinate/incorporate external assistance into emergency response
		3.4	Control internal and external communication in accordance with the emergency response plan
4	**Coordinate emergency**	4.1	Convey feedback relating to progress/status of the emergency to emergency response teams and other

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	responses		personnel
		4.2	Regularly reassess and modify responses and tactics in accordance with the status of the emergency
		4.3	Conduct periodic 'time outs' to enable situation updates and proactive directing of resources and actions
5	**Assess emergency response/actions**	5.1	Collate and assess information on status of the emergency to enable a final decision to be made and communicated to declare the end of the emergency, or abandonment of the facility
		5.2	Consider future stages of the emergency and develop mitigation strategies in advance of those events
6	**Undertake post-emergency evaluation**	6.1	Undertake a post-response evaluation of the emergency in order to determine the effectiveness of the response strategies and the emergency response plan
		6.2	Recommend and communicate modification and adjustments to the emergency response plans to appropriate personnel
		6.3	Review and modify planning of emergency response exercises and training in light of the outcomes of the emergency response evaluation

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.

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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

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.

Resources

Systems and resources include the following:

- emergency repair equipment and tools, including pipeline repair equipment
- emergency response systems
- emergency communication systems
- work management systems
- installation facility and operational layout
- safety case or hazard control plan management systems

External services

External services and third-parties include one or more of the following:

- fire brigade
- police
- ambulance
- air traffic control
- emergency services
- relevant state/territory or federal government agency
- local councils
- shippers and customers
- medical establishments
- consortium partners
- national or international medivac services

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Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOHS511A Manage emergency incidents

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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Assessment Requirements for PMAWHS511 Manage emergency incidents

Modification History

Release 1. Supersedes and is equivalent to PMAOHS511A Manage emergency incidents

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 include the ability to:
- rapidly assess a situation and process information quickly under pressure
- communicate clearly and unambiguously with team members, management and other personnel under stress
- lead and manage/supervise team members in emergency situations
- facilitate and manage emergency responses, allocate resources and prioritise activities
- utilise all available internal and external resources
- interpret information about changing conditions, hazards and individuals' needs and make prompt decisions about appropriate action and allocation of resources
- facilitate evaluation of emergency response and make recommendations for improvements

write strategies, tactics and procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisational procedures, including those covering:
  - safety, hazards and hazard control
  - incident, fire and accident
  - environmental protection
  - risk assessment/risk management
  - personal protective equipment (PPE)
  - relevant facility fire management and safety systems
  - communication systems
  - emergency response plans
- hazards that may arise in the job/work environment, and:
  - their possible causes
  - potential consequences
  - risks
  - appropriate risk controls
- fire chemistry, fire characteristics and chemical hazards
- location and availability of fire-fighting equipment

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- types and application of fire-fighting and containment media
- types and application of non-fire emergency containment and control
- hazard identification, assessment and control of risk
- types and application of PPE and breathing apparatus
- search and rescue techniques (including self rescue techniques)
- teamwork principles and techniques
- types and impact of emergency tactics
- casualty handling techniques.

Assessment Conditions

Assessment for this unit of competency will be in a simulated environment. Simulation should be based on emergency incidents relevant to the particular facility/installation and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3-D virtual reality interactive systems. ‘War gaming’ is an appropriate approach.

The unit will be assessed in as holistic a manner as is practical and the judgement of competence based on a holistic assessment of the evidence.

The collection of performance evidence:

- must provide evidence of the ability to manage emergency incidents over the range of situations which might be expected to be encountered
- must include the demonstration of managing and coordinating an emergency incident in a simulated environment.

Assessment should occur in a simulated environment which sufficiently replicates 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.

Foundation skills are integral to competent performance of the unit and should not be assessed separately.

Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.

Technical competence can be demonstrated through one or more of:

- relevant VET or other qualification/Statement of Attainment
- appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
- appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions

Currency can be demonstrated through one or more of:

- being currently employed undertaking the type of work being assessed
- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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MSS405088 Plan, implement and monitor energy management

Modification History

Release 1. Supersedes but is not equivalent to MSS405086 - Develop sustainable energy practices.

Application

This unit describes the skills and knowledge required to review energy use, and develop objectives, strategies and action plans for improved energy management in an organisation. It includes implementation and permanent monitoring as well as consultation and collaboration with key stakeholders throughout the process.

This unit applies to operational and technical specialists, managers or similar who combine detailed knowledge of energy management with critical thinking, communication, and planning and organisational skills to develop and implement plans for improved energy management. Energy management responsibilities may be part of a broader work role or a primary job role. In some cases, the individual may work as an external advisor.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Sustainable Operations

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. Review energy use	1.1 Identify current energy sources used in different business areas and processes 1.2 Identify and analyse areas of significant energy consumption from operational data 1.3 Identify and analyse the internal and external factors that

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	significantly affect energy use and consumption in the organisation 1.4 Identify energy generating activities and their potential for use in the organisation 1.5 Investigate and compare costs and benefits of current and potential energy sources for the organisation 1.6 Identify, prioritise and record opportunities for improving energy performance based on analysis
2. Engage with stakeholders	2.1 Identify key stakeholders and their role in influencing or improving energy management 2.2 Develop approaches to engage with stakeholders based on their business perspectives 2.3 Use and adapt technical information about energy and its management to meet stakeholder needs 2.4 Identify and use opportunities to consult and collaborate with stakeholders about current and potential energy performance
3. Establish energy performance objectives and indicators	3.1 Establish and articulate energy objectives based on analysis and consultation 3.2 Align energy management objectives with broader organisation objectives and priorities 3.3 Develop energy management performance indicators that support objectives
4. Develop energy management strategies and action plans	4.1 Identify and develop strategies that support energy management objectives 4.2 Align strategies with broader organisation goals and priorities 4.3 Complete an initial feasibility review from existing operational and financial data 4.4 Identify and document proposed operating and administrative framework that clearly defines actions, responsibilities, timelines and evaluation methods
5. Implement strategies and action plans	5.1 Identify priority areas for action and seek further business case information to support implementation 5.2 Set up systems and procedures that support strategies and action plans in consultation with relevant stakeholders 5.3 Establish communication channels and provide information to key

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Elements	Performance Criteria
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	stakeholders to support implementation 5.4 Support implementation activities in accordance with agreed plans
6. Monitor and report on strategies and action plans	6.1 Monitor activities and identify progress and shortfalls against energy performance objectives and indicators 6.2 Determine and act on the need for adjustments based on progress made 6.3 Obtain performance monitoring data and report on energy management in accordance with agreed plans

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Reading skills to interpret varied types of operational information
- Writing skills to develop planning, administrative and operational documentation
- Oral communication skills to engage with others about potentially complex and interrelated business issues
- Numeracy skills to analyse energy costs and consumption; interpret business financial information
- Teamwork skills to develop and implement collaborative approaches to energy management
- Technology skills to create and format planning, administrative and operational documentation

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

Unit Mapping Information

Supersedes but is not equivalent to MSS405086 - Develop sustainable energy practices.

Links

MSS Sustainability Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS405088 Plan, implement and monitor energy management

Modification History

Release 1. Supersedes but is not equivalent to MSS405086 - Develop sustainable energy practices.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- planned, implemented and monitored energy management strategies for 1 organisation, area of operation or process that include consideration of:
  - alternative sources
  - efficiency and reduction of carbon emissions
  - waste management.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- types and sources of internal and external information for energy management planning:
  - current and potential energy sources
  - production data
  - current usage levels
  - process needs
  - regulatory environment
  - business goals
- methods for identifying improvement opportunities
- key stakeholders and engagement strategies
- potential objectives for energy management
- how to develop energy management performance indicators
- how to align energy management objectives with broader organisation priorities
- links between energy and other aspects of sustainability
- methods of analysing energy efficiency for different types of energy
- ways of categorising energy use
- key principles and features of different energy management strategies
  - alternative sources
  - conservation
  - efficiency and reduction of carbon emissions
  - trading schemes

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  - waste management – necessary and unnecessary *muda*
- types of potential improvements, including those related to:
  - capital purchases
  - equipment adaptation
  - production/process
  - maintenance
  - transport
- key aspects of the energy management planning, implementation, monitoring and reporting framework, including requirements of ISO 50001 Energy Management Systems
- concept of permanent monitoring versus temporary monitoring.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
- information about organisation operations, including financial data
- current and relevant information technology.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

MSS Sustainability Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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PSPGEN015 Work effectively with diversity

Modification History

Release	Comments
1	This unit was released in PSP Public Sector Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to PSPGOV308B Work effectively with diversity. • Unit code updated • Content and formatting updated to comply with the new standards • All PC transitioned from passive to active voice

Application

This unit describes the skills required to work effectively with a diverse range of clients and colleagues, while recognising and valuing individual differences.

This unit applies to those working with diversity in the workplace, in a workgroup and delivering a service to clients.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work independently and/or as part of a team where support is available for more complex situations, performing routine tasks in a range familiar of contexts.

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

Competency Field

General

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Recognise and value individual differences	1.1 Identify diversity of workgroup and the benefits this provides the organisation. 1.2 Acknowledge and use each person's individuality and strengths for the benefit of workplace activities, stakeholder relationships and outcomes. 1.3 Identify and value aspects of diversity which enhance the workplace environment for all.
2. Work effectively with diverse clients and colleagues	2.1 Develop a range of communication styles used to respect and reflect the diversity of the workplace. 2.2 Comply with the requirements of legislation relating to workplace diversity through personal conduct in the workplace. 2.3 Seek feedback from clients and the workgroup to continuously improve personal effectiveness in working with diversity.

Foundation Skills

The foundation skills demands of this unit have been mapped for alignment with the Australian Core Skills Framework (ACSF). The following tables outline the performance levels indicated for successful attainment of the unit.

ACSF levels indicative of performance :

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Learning					Reading					Writing					Oral communication					Numeracy NA					

Performance variables

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Support					Context					Text complexity					Task complexity				

Further information on ACSF and the foundation skills underpinning this unit can be found in the Foundation Skills Guide on the GSA website.

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Unit Mapping Information

This unit supersedes and is equivalent to PSPGOV308B Work effectively with diversity.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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Assessment Requirements for PSPGEN015 Work effectively with diversity

Modification History

Release	Comments
1	These Assessment Requirements were released in PSP Public Sector Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- using communication styles to suit different audiences and purposes
- demonstrating respect and inclusiveness to people from diverse backgrounds
- accessing and reading documents, including legislation and codes of conduct, and applying them to work practices

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- cultural diversity, including issues of racism, harassment and victimisation
- the benefits of workplace diversity
- organisational policies and procedures

Assessment Conditions

This unit contains no specific industry-mandated assessment conditions. Guidance on suggested and recommended conditions and methods can be found in the Implementation Guide.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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PSPMGT003 Manage change

Modification History

Release	Comments
1	This unit was released in PSP Public Sector Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to PSPMNGT604B Manage change. • Unit code updated • Content and formatting updated to comply with new standards • All PC transitioned from passive to active voice

Application

This unit describes the skills required to manage planned change that may be caused by restructuring or Machinery of Government changes, imposed by others, or business unit initiated change. It includes confirming that change is required, determining the likely impact of change, developing a change management strategy, fostering commitment to workplace change, and implementing the change management strategy.

This unit applies to those working in management roles where they are involved in organisational change mechanisms.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work autonomously, performing complex task in a range of familiar contexts.

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

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Competency Field

Management

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Confirm that change is required	1.1 Consider factors impacting upon the business unit, the organisation or within the political environment. 1.2 Consult key stakeholders to establish that change is required and/or imminent and the nature of the change. 1.3 Conduct benchmarking with other similar organisations, functions, best practice standards to confirm the need for change. 1.4 Consult specialists and experts as required to assist in the identification of major change requirements or opportunities. 1.5 Identify and address the need for management support, expertise and advice to maximise the advantages of change management strategies.
2. Determine the likely impact of change	2.1 Analyse the proposed change in relation to organisational structure and function, and strategic objectives. 2.2 Identify the individuals, groups and others likely to be affected by change and their expectations and concerns. 2.3 Identify and explain the eventual impact of the proposed change on employees and employee relations in line with individuals' specific needs and their differing responses to change. 2.4 Discuss options and specific proposals for change and the consequences with staff and invite feedback to ensure that people are involved in the decisions that affect them. 2.5 Identify and plan for potential risks associated with change. 2.6 Communicate the requirements and planned outcomes for change.
3. Develop a change management strategy	3.1 Prepare change management strategy and related communication strategies with key stakeholders. 3.2 Structure the strategy to address the transition from present to future arrangements and identify tactics for dealing with ambiguity in roles, functions, organisational priorities or structures. 3.3 Discuss future trends and organisational needs and consider them in the process of developing strategies for dealing with change.

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	3.4 Design change management activities to comply with the framework provided by relevant legislation and organisational policy. 3.5 Devise time schedules, performance standards and interim checkpoints for change management strategies. 3.6 Obtain approval to implement the chosen change management strategy from senior management.
4. Foster commitment to workplace change	4.1 Use a range of strategies to foster a positive attitude to change, especially from the individuals on whom the organisational change will have the most effect. 4.2 Provide advice to key stakeholders on strategies for effective change management and show sensitivity to people's individual responses to change. 4.3 Seek and use resources required to implement change within the business. 4.4 Use leadership and communication strategies to assist others to deal with ambiguity and adapt to change.
5. Implement a change management strategy	5.1 Alter and implement policies, practices and procedures as required to support the change management strategy. 5.2 Identify and address barriers to change in accordance with the organisation's risk management plan. 5.3 Identify, review and renegotiate priorities with key stakeholders in light of changing circumstances. 5.4 Activate strategies for embedding the change in accordance with the change management strategy. 5.5 Develop a process and performance indicators to monitor the impact of change. 5.6 Implement adjustments to the change management strategy as a result of performance monitoring, to ensure sustained positive outcomes.

Foundation Skills

Foundation skills are embedded within the elements and performance criteria of this unit.

Unit Mapping Information

This unit supersedes and is equivalent to PSPMNGT604B Manage change.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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Assessment Requirements for PSPMGT003 Manage change

Modification History

Release	Comments
1	These Assessment Requirements were released in PSP Public Sector Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- influencing and counselling in the context of change management
- interpreting and explaining complex, formal documents and assisting others to apply them in the workplace
- preparing written advice and reports requiring reasoning and precision of expression

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- change management strategies
- effects of change
- industrial relations issues as applicable to change processes
- negotiation processes
- key factors in the internal and external operating environment
- understanding of organisational goals, policies and procedures
- jurisdictional legislation applicable to management and human resource management functions

Assessment Conditions

This unit contains no specific industry-mandated assessment conditions. Guidance on suggested and recommended conditions and methods can be found in the Implementation Guide.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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PSPMGT004 Manage diversity

Modification History

Release	Comments
1	This unit was released in PSP Public Sector Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to PSPMNGT605B Manage diversity. • Unit code updated • Content and formatting updated to comply with new standards • All PC transitioned from passive to active voice

Application

This unit describes the skills required to provide productive diversity management to maximise workforce effectiveness. It includes contributing to, monitoring a diversity strategy and facilitating communication with a diverse workforce.

This unit applies to those working in management roles involved in personnel management.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work autonomously with management responsibilities performing sophisticated tasks in a range of contexts.

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

Competency Field

Management

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Contribute to the development of a diversity strategy	1.1 Identify the organisational context and framework for the diversity strategy and establish key result areas. 1.2 Identify diversity issues and objectives to enhance business unit and organisational effectiveness. 1.3 Use the strategy to identify benefits and opportunities provided by a diverse workforce. 1.4 Link diversity objectives in the strategy with the demographic profile of the client base, the organisation's strategic goals and the core business of the business unit. 1.5 Consult with stakeholders, including people from key equity groups and the organisation's clients. 1.6 Design the strategy to provide a mechanism through which diversity issues can be integrated.
2. Promote and review diversity strategy	2.1 Communicate and promote the strategy within the business unit and the organisation in accordance with audience needs. 2.2 Identify the need for diversity support programs and establish such programs in accordance with the objectives of the diversity strategy. 2.3 Encourage individuals to align everyday work with the diversity strategy. 2.4 Monitor and report progress of diversity strategies within business plans. 2.5 Monitor and review the effectiveness of the strategy and identify and act upon recommendations for enhancements.
3. Facilitate the development of a workforce that promotes and values diversity	3.1 Identify and communicate benefits of a diverse workforce to those working within the business unit and the organisation. 3.2 Develop or adopt initiatives and resources to address barriers to equal employment opportunity within the organisation. 3.3 Employ a range of leadership styles to facilitate intercultural management and to manage diverse teams. 3.4 Identify and use the diversity factors associated with individuals within the workforce in the delivery of services to diverse clients. 3.5 Accept and encourage a range of working styles that are reflective of a diverse workforce, unified to the organisational context. 3.6 Use diversity training and awareness programs, to promote the

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	benefits of a diverse workforce.
4. Facilitate communication within a diverse workforce	4.1 Identify and address language, literacy and numeracy issues to facilitate full participation of all members of the workforce and development activities. 4.2 Employ a range of communication strategies to meet the needs of a diverse workforce and client base. 4.3 Identify the target audience and tailor communications strategies accordingly. 4.4 Identify and use resources to facilitate effective communication within the workplace. 4.5 Identify and adjust ineffective and inappropriate communication strategies to meet the information needs of a diverse workforce and client base.

Foundation Skills

The foundation skills demands of this unit have been mapped for alignment with the Australian Core Skills Framework (ACSF). The following tables outline the performance levels indicated for successful attainment of the unit.

ACSF levels indicative of performance:

1	2	3	**4**	5	1	2	3	**4**	5	1	2	3	4	**5**	1	2	3	4	**5**	1	2	3	4	5
Learning					Reading					Writing					Oral communication					Numeracy NA					

Performance variables:

1	2	3	4	**5**	1	2	3	**4**	5	1	2	3	**4**	5	1	2	3	4	**5**
Support					Context					Text complexity					Task complexity				

Further information on ACSF and the foundation skills underpinning this unit can be found in the Foundation Skills Guide on the GSA website.

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Unit Mapping Information

This unit supersedes and is equivalent to PSPMNGT605B Manage diversity.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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Assessment Requirements for PSPMGT004 Manage diversity

Modification History

Release	Comments
1	These Assessment Requirements were released in PSP Public Sector Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- monitoring and reporting on the progress of diversity strategies
- using communication involving exchanges of complex oral information
- explaining complex ideas to diverse audiences
- interpreting and explaining complex, formal documents and assisting others to apply them in the workplace
- preparing written advice and reports requiring reasoning and precision of expression

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- the concept of diversity and its integration within and across all human resource and management functions and areas
- cultural diversity, including issues of racism, discrimination, harassment and victimisation
- the organisation’s policies and strategic goals relating to diversity and the implications of these for current and future human resource management
- the relationship between management of diversity and organisational effectiveness
- equal employment opportunity, access and equity principles
- productive diversity principles including flexibility, multiplicity, devolution, negotiation and pluralism
- institutional racism and resulting indirect discrimination

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- jurisdictional legislation, instructions, directions and standards that underpin or impact on workplace diversity
- public sector policies, practices and procedures related to diversity

Assessment Conditions

This unit contains no specific industry-mandated assessment conditions. Guidance on suggested and recommended conditions and methods can be found in the Implementation Guide.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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RIIPBE203D Conduct precipitation operations

Modification History

Release	Comment
1	This unit replaces RIIPBE203A Conduct precipitation operations
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to conduct precipitation operations in Metalliferous mining.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Unit Sector

Metalliferous mining

Elements and Performance Criteria

1. Plan and prepare for precipitation operations	1.1 Access, interpret and apply precipitation operation documentation and ensure the work activity is compliant 1.2. Obtain, read, interpret, clarify and confirm work requirements 1.3. Coordinate and communicate with other personnel using approved communication methods 1.4. Select and wear personal protective equipment appropriate for work activities 1.5. Select and use appropriate type of auxiliary equipment for work activities 1.6. Perform equipment pre-start checks to ensure equipment is ready for operation

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	1.7. Identify and address potential risks, hazards and environmental issues, and implement control measures 1.8. Obtain and interpret emergency procedures and be prepared for fire/accident/emergency 1.9. Use approved dust suppression and extraction methods 1.10. Ensure area is well ventilated before entry into work area
2. Start-up equipment in sequence	2.1. Carry out start-up procedures and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. Read and interpret and apply data from equipment indicators to determine precipitation efficiency 3.2. Continuously inspect and monitor operations/plant and catchment areas to identify defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise and maintain efficient precipitation 3.4. Add reagents to approved operating parameters 3.5. Determine the effects adjustments have on upstream or downstream outputs and communicate to others 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information verbally or in writing to oncoming shift
4. Shutdown in sequence and/or isolate equipment	4.1. Shutdown or isolates equipment based on process and safety requirements 4.2. Perform post shutdown or isolation checks 4.3. Returns equipment to service
5. Conduct housekeeping activities	5.1. Clear work area and dispose of or recycle materials 5.2. Clean and maintain condition of equipment, ensure suitability for use, and address/report issues 5.3. Manage and/or report hazards, and maintain a safe working environment 5.4. Process records

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIPBE203A Conduct precipitation operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIPBE203D Conduct precipitation operations

Modification History

Release	Comment
1	This unit replaces RIIPBE202A Conduct precipitation operations
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies applicable documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of precipitation operations including:
  - conducting prestart, shutdown and secure of equipment
  - identifying and reporting all potential hazards, risks, environmental issues
  - applying operational safety requirements
  - accessing, interpreting and applying technical information
- works effectively with others to undertake and complete the precipitation operations that meets all of the required outcomes including:
  - using a range of communications techniques and equipment to convey information to others
  - maintaining written and verbal reporting requirements and procedures
  - communicating clearly and concisely with others to receive and clarify work instruction
- demonstrates completion of the conduction of precipitation operations that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - coordinating precipitation activity with others
  - adjusting equipment and communicating effects upstream and downstream
  - adding reagents

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- isolating and shutting down precipitation equipment in sequence and perform checks
- performing minor maintenance
- returning digestion equipment to service

Knowledge Evidence

The candidate must demonstrate knowledge of conducting precipitation operations through:

- apply organisation and site requirements and procedures for conducting precipitation operations including:
  - end-point identification
  - diagnosing faults
  - identifying and address hazards
  - interpreting reports
  - lift (manual, cranes and loads)
  - maintaining records
  - reporting defects
  - using relevant hand and power tools
  - breakdown procedures
  - contaminant identification
  - precipitation process
  - chemistry - basic solubility
  - sulphide precipitation
  - neutralisation precipitation
  - liquid and solid separation processes in precipitation and crystallisation
  - flocculation agents
  - filtration methods
  - emergency procedures
  - environmental procedures
  - equipment safety requirements
  - seeding and crystallisation processes
  - wet and dry working procedures
- identifying equipment limitations and operating parameters
- identifying repair requirements
- interpreting and applying with isolation procedures
- interpreting and applying metallurgical and technical data (basic)
- describing pumping system and flow charts (pipeline and sprinkler systems)
- identifying reagent types
- monitoring sampling
- identifying types of ores (basic)

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Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit must be assessed in the context of this sector's work environment; and,
- this unit must 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,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 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.	

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*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 frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIPBE301D Conduct calcinations activities

Modification History

Release	Comment
1	This unit replaces RIIPBE301A Conduct calcinations activities
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to apply conduct calcinations activities in Metalliferous Mining.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Unit Sector

Metalliferous mining

Elements and Performance Criteria

1. Plan and prepare for calcination operations	1.1 Access, interpret and apply calcinations activities documentation and ensure the work activity is compliant 1.2. Obtain, read, interpret, clarify and confirm work requirements 1.3. Coordinate and communicate with other personnel using approved communication methods 1.4. Select and wear personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Carry out pre-start, start-up, park up, shutdown and secure equipment procedures

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	1.7. Identify and address potential risks, hazards and environmental issues, and implement control measures 1.8. Obtain and interpret emergency procedures and be ready for fire/accident/emergency 1.9. Use approved dust suppression and extraction methods 1.10. Ensure area is well ventilated before entry
2. Start-up equipment in sequence	2.1. Carry out start-up procedures and completes start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. Read and interpret data from equipment indicators to determine calcination efficiency 3.2. Continuously inspect and monitor operations/plant and catchment areas to identify process defects and potential problems 3.3. Adjust equipment to approved operating parameters to optimise and maintain efficient calcining and to meet product quality targets 3.4. Add reagents to approved operating parameters 3.5. Determine the effects adjustments have on upstream or downstream outputs and communicate to others 3.6. Complete all required documentation clearly, concisely and on time 3.7. Pass on end of shift information verbally or in writing to oncoming shift
4. Shutdown in sequence and/or isolate equipment	4.1. Shutdown or isolates equipment based on process and safety requirements 4.2. Perform post shutdown or isolation checks 4.3. Return equipment to service
5. Conduct housekeeping activities	5.1. Clear work area and dispose of or recycle materials 5.2. Clean and maintain condition of equipment, ensure suitability for use, and address/report issues 5.3. Manage and/or report hazards, and maintain a safe working environment 5.4. Process records

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIPBE301A Conduct calcinations activities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIPBE301D Conduct calcinations activities

Modification History

Release	Comment
1	This unit replaces RIIPBE301A Conduct calcinations activities
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- implements requirements, procedures and techniques for the safe, effective and efficient completion of calcinations activities including:
- adjusting equipment to approved operating parameters to meet product quality targets
- adding reagents to approved operating parameters
- carrying out minor maintenance to maintain condition of equipment
- completing all required documentation clearly, concisely and on time
- works effectively with others to undertake and complete the calcinations activities in a way that meets all of the required outcomes including:
  - using a range of communications techniques and equipment to convey information to others
  - maintaining written and verbal reporting requirements and procedures
  - organising work activities to meet all task requirements
  - communicating clearly and concisely with others to receive and clarify work instructions
- demonstrates completion of the conduction of calcinations activities that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - coordinating calcination activity with others
  - adjusting equipment and communicating effects upstream and downstream

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- adding reagents
- isolating and shutting down calcination equipment in sequence and perform checks
- performing minor maintenance
- returning calcination equipment to service

Knowledge Evidence

The candidate must demonstrate knowledge of conducting calcinations activities through:

- apply, organisation and site requirements and procedures for conducting calcinations activities including:
  - WHS, site safety and emergency requirements and procedures
  - environmental procedures
  - hazardous goods procedures and consequences of spills and hazardous goods
  - isolation procedures
  - equipment safety requirements
  - operational procedures and checks
  - wet and dry working procedures
  - breakdown procedures
  - diagnosing faults, reporting defects and identifying repair requirements
  - interpreting reports
  - using lift (manual, cranes and loads)
  - accurately maintaining records
  - monitoring operations
  - using hand and power tools
  - contaminant identification
  - calcining process
  - pumping system and flow charts (pipeline and sprinkler systems)
  - reagent types
  - sampling
- monitor equipment limitations and operating parameters
- interpreting metallurgical and technical data (basic)
- identifying types of ores

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit must be assessed in the context of this sector's work environment; and,
- this unit must 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,

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- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 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.	

*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 frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIPBE308D Conduct thickening and clarifying process

Modification History

Release	Comment
1	This unit replaces RIIPBE308B Conduct thickening and clarifying process
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to conduct thickening and clarifying process in Metalliferous and Coal mining.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Unit Sector

Coal mining

Metalliferous mining

Elements and Performance Criteria

1. Plan and prepare for thickening and clarifying process	1.1. Access, interpret and apply thickening and clarifying process documentation and ensure the work activity is compliant 1.2. Obtain, read, interpret clarify and confirm work requirements 1.3. Coordinate and communicate with other personnel using approved communication methods 1.4. Select and wear personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment pre-start checks to ensure equipment is

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	ready for operation 1.7. Identify and address potential risks, hazards and environmental issues, and implement control measures 1.8. Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency 1.9. Use dust suppression and extraction methods 1.10. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out start-up procedures and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. Read and interpret data from equipment indicators to determine torque, bed characteristics, flow characteristics and reagent dosage 3.2. Continuously inspect plant 3.3. Control discharge of underflow/overflow agents to agreed operating parameters 3.4. Direct underflow/overflow to alternate location according to work specifications 3.5. Monitor performance of thickener to meet agreed operating parameters 3.6. Complete all required written documentation concisely and on time 3.7. Pass on shift changeover details to oncoming shift
4. Shutdown in sequence and/or isolate equipment	4.1. Shutdown and/or isolate equipment based on process and safety requirements 4.2. Perform post-shutdown and/or isolation checks 4.3. Restore plant to service
5. Conduct housekeeping activities	5.1. Clear work area and dispose of or recycle materials 5.2. Clean and maintain condition of equipment, ensure suitability for use, and address/report issues 5.3. Process records

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIPBE308B Conduct thickening and clarifying process

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIPBE308D Conduct thickening and clarifying process

Modification History

Release	Comment
1	This unit replaces RIIPBE308B Conduct thickening and clarifying process
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of thickening and clarifying processes including:
  - conducting start up, shut down and/or isolation of equipment in sequence
  - operating and monitoring equipment
  - carrying out minor maintenance
  - conducting housekeeping activities
  - diagnosing faults, reporting defects and identifying repair requirements
  - applying lifting techniques (manual, automated)
- works effectively with others to undertake and complete the thickening and clarifying processes in a way that meets all of the required outcomes including:
  - using a range of communications techniques and equipment to convey information to others
  - maintaining written and verbal reporting requirements and procedures
  - organising work activities to meet all task requirements
  - communicating clearly and concisely with others to receive and clarify work instructions
- demonstrates completion of thickening and clarifying processes that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:

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- identifying and interpreting data from equipment ***indicators*** to determine torque, bed characteristics, flow characteristics and reagent dosage
- continuously inspect ***plant***
- controlling discharge of underflow/overflow agents to agreed operating parameters
- directing underflow/overflow to alternate location according to work specifications
- monitoring performance of thickener to meet agreed operating parameters

Knowledge Evidence

The candidate must demonstrate knowledge of conduct thickening and clarifying process through:

- accessing, interpreting and applying organisation and site requirements and procedures for:
  - WHS, site safety and emergency requirements
  - environmental principles/procedures
  - equipment safety requirements
  - hazardous substance procedures and consequences of spills
  - operational procedures and checks
  - site procedures
  - isolation procedures
  - accurate record maintenance
  - contaminant identification and treatment
  - reading and interpreting reports
- applying depressant principles
- monitoring equipment limitations and operating parameters
- interpreting metallurgical and technical data
- identifying reagent types
- identifying types of ores

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit must be assessed in the context of this sector’s work environment; and,
- this unit must 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,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,

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- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 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.	

*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 frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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Links

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RIIRIS201E Conduct local risk control

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 conduct local risk 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 some responsibility for the quality of own work outcomes.

Licensing, legislative and certification requirements may apply to this unit and can vary between states, territories and industry sectors. Users must check requirements with relevant body before applying the unit.

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. Plan and prepare for risk control	1.1 Obtain, interpret and confirm work requirements 1.2 Access, interpret and apply documentation and procedures 1.3 Inspect work area conditions to identify potential hazards 1.4 Apply risk management procedures to deal with recognised hazards according to workplace procedures 1.5 Identify the type and scope of unresolved hazards and address their potential impact
2. Assess and identify unacceptable risk	2.1 Assess and determine the consequences of an event according to workplace procedures 2.2 Consider and determine the likelihood of the event 2.3 Identify criteria to determine the acceptability/unacceptability of the risk 2.4 Assess risk against criteria to identify if it warrants unacceptable risk status which requires action

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ELEMENT	PERFORMANCE CRITERIA
	2.5 Communicate and clarify the decision to relevant personnel
3. Identify, assess and implement risk treatments	3.1 Identify and consider all possible risk treatment options 3.2 Identify options by preliminary analysis and consideration of options 3.3 Analyse options with consideration to resource requirements 3.4 Identify and select most appropriate and effective course of action 3.5 Plan and prepare the risk treatment and obtain the required resources and approval 3.6 Implement the approved risk treatment 3.7 Review the risk treatment processes
4. Complete records and reports	4.1 Communicate the risk treatment processes to relevant personnel 4.2 Complete written records and reports for hazards and actions from risk assessment

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	• Produces and completes written documents required for workplace procedures
Numeracy	• Calculates resource requirements, including use of basic addition, subtraction, multiplication and division
Self-management	• Monitors and minimises own exposure to worksite risks and hazards during activities

Unit Mapping Information

Supersedes and is equivalent to RIIRIS201D Conduct local risk control.

Links

Companion Volume implementation guides is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIRIS201E Conduct local risk control

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:

- conduct local risk controls on at least two occasions, including:
  - identifying unacceptable risk using the acceptability/unacceptability criteria
  - working with others to determine risk controls
  - assessing and determining the consequences and likelihood of potential risk
  - controlling risk by selecting and implementing the most appropriate controls
  - completing reports and records about the risk assessment and treatment implementation.

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 conducting local risk control
- work with others to conduct of local risk control
- communicate 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 policies, procedures and documentation required to conduct local risk control, including those related to:
  - work health and safety procedures
  - emergency procedures
  - organisational risk management policy and procedure requirements

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  - conducting worksite risk management procedures
  - conducting and maintaining worksite communication, reporting and recording procedures
- procedures and criteria for identifying and assessing hazards, risks, acceptability of risks and controls
- risk control options, including:
  - hazards elimination
  - implementation of the hierarchy of controls
- procedures for writing worksite records and reports, including:
  - hazard reporting reports
  - incident reports
  - near miss reports.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
  - personal and protective equipment
  - equipment required to conduct local risk control
  - 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

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- 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.

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Links

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TAEASS301 Contribute to assessment

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to contribute to the assessment process.

It applies to a person with technical or vocational expertise who is in a supervisory or mentoring/coaching work role, and for whom collecting the evidence for assessment is an adjunct to principal work responsibilities. The unit applies to those involved in collecting evidence for assessment against units of competency or accredited courses.

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

Unit Sector

Assessment

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Clarify role and responsibilities in the assessment process	1.1 Discuss and confirm the purpose of the assessment with relevant people 1.2 Discuss and confirm benchmarks for assessment with the qualified assessor 1.3 Access, read and clarify assessment plan with the qualified assessor 1.4 Discuss and agree with the qualified assessor specific responsibilities in gathering evidence, and the types of evidence to be gathered
2. Confirm organisational arrangements for evidence gathering	2.1 Access and confirm relevant assessment system policies and procedures, organisational, legal and ethical requirements, and other relevant advice on assessment 2.2 Clarify the nominated assessment tools and methods for collecting evidence with the qualified assessor, to ensure that the procedures to be followed, and the instruments to be used are clear 2.3 Discuss and confirm with the relevant people the assessment context, including the candidate's characteristics and any need for reasonable adjustments 2.4 Confirm and arrange resource requirements in consultation with relevant people
3. Collect evidence in accordance with the assessment plan	3.1 Explain the assessment process to the candidate, including the different responsibilities of the parties involved, and refer any candidate issues or concerns to the qualified assessor, prior to undertaking assessment activities 3.2 Use assessment instruments to gather quality evidence within the available time and resources, according to organisational, legal and ethical requirements
4. Record and report findings	4.1 Organise and provide evidence to the qualified assessor in a format suitable for analysis according to the assessment system's policies and procedures 4.2 Actively seek feedback from the qualified assessor on whether evidence-gathering activities meet the principles of assessment, and whether the evidence collected meets the rules of evidence 4.3 Document areas for improvement in collecting evidence for future assessment activities

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	4.2	• Seeks feedback to build knowledge to improve process and professional practice
Reading	1.3, 2.1, 2.2, 2.4, 3.2	• Sources and interprets procedural, and compliance information
Writing	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 3.2, 4.1, 4.3	• Completes workplace documentation accurately using the appropriate language
Oral Communication	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 3.1	• Communicates information and process requirements clearly, based on techniques appropriate to the audience and environment • Uses appropriate speaking and listening techniques to obtain specific information, and to support the assessment process
Navigate the world of work	2.1, 2.2, 3.2, 4.1	• Accesses, confirms and takes responsibility for adherence to policies, procedures, and legal and ethical requirements
Interact with others	4.2	• Asks questions to clarify understanding, and seeks feedback and further information
Get the work done	3.1, 4.1	• Organises work according to defined requirements, taking some responsibility for decisions regarding the format of information

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
TAEASS301 Contribute to assessment	TAEASS301B Contribute to assessment	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEASS301 Contribute to assessment

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- clarifying the role to be taken during the assessment
- clarifying the assessment plan with the qualified assessor, including agreement about:
  - what evidence will be collected
  - how the evidence will be collected
- carrying out a minimum of three evidence-gathering activities and, on each occasion:
  - document evidence in a clear and concise manner
  - document feedback from others involved in the assessment

reporting findings to the qualified assessor, including an explanation of how the assessment meets the rules of evidence on each of the three occasions.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- competency-based assessment
- the principles of assessment
- the rules of evidence
- the different purposes of assessment
- the diversity of assessment contexts
- different types of evidence
- evidence-gathering methods
- the purpose and features of assessment tools, and assessment plans

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- potential barriers and processes relating to evidence-gathering procedures, and assessment processes
- the organisational policies and procedures relevant to this unit of competency.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment, and include access to qualified assessors for consultation.

Assessors 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=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEASS401 Plan assessment activities and processes

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to plan the assessment process, including recognition of prior learning (RPL), in a competency-based assessment system.

It applies to individuals with assessment planning responsibilities.

In planning activities and processes, individuals are required to identify the components of assessment tools, analyse and interpret assessment tools, and develop assessment instruments (also known as assessment tasks) and assessment plans.

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

Unit Sector

Assessment

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. Determine the assessment approach	1.1 Identify the candidate and confirm the purposes and context of the assessment with relevant people according to legal, organisational and ethical requirements 1.2 Identify and access applicable industry or workplace standards for the assessment, and any specific assessment requirements
2. Prepare the assessment	2.1 Analyse units of competency and assessment requirements to

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ELEMENT	PERFORMANCE CRITERIA
plan	identify evidence needed to demonstrate competence, according to the rules of evidence 2.2 Select assessment methods and instruments to support the collection of defined evidence, taking into account the context in which the assessment will take place 2.3 Develop the assessment plan and gain approval from relevant stakeholders
3. Identify modification and contextualisation requirements	3.1 Use information from the candidate and, where relevant, the candidate's workplace to identify contextualisation needs 3.2 Check advice provided by the training package or course developer relevant to identified contextualisation needs 3.3 Analyse existing assessment tools and record amendments required to address identified contextualisation needs 3.4 Determine opportunities for integrated assessment activities and record any changes required to assessment tools
4. Develop the assessment instruments	4.1 Analyse available assessment instruments for their suitability for use, and identify any required modifications 4.2 Develop assessment instruments to meet the required standard and specific workplace/candidate needs 4.3 Map assessment instruments against the unit or course requirements 4.4 Write clear instructions for the candidate and assessor regarding the use of assessment instruments 4.5 Check and confirm that draft assessment instruments meet required standards and specific workplace/candidate needs and record outcomes of checks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

FOUNDATION SKILLS *This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.*		
Skill	**Performance**	**Description**

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	Criteria	
Reading	1.1, 1.2, 2.1, 3.1, 3.2, 3.3, 3.4, 4.2, 4.3	• Identifies and confirms legal, organisational and ethical requirements • Selects and analyses assessment-related documents
Writing	1.1, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5	• Documents the assessment plan • Develops assessment instruments, including instructions and mapping • Records outcomes of draft assessment checks
Oral Communication	1.1, 2.3, 3.1	• Participates in exchanges about assessment processes and the trialling of instruments appropriate to the audience
Navigate the world of work	1.1	• Identifies, confirms and takes responsibility for adherence to policies, procedures, legal, and ethical requirements
Interact with others	1.1, 2.3, 3.1	• Collaborates with others as part of routine activities, and to confirm understanding
Get the work done	1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 4.2, 4.3, 4.5	• Plans a range of routine processes and related tasks with logically sequenced steps, according to defined standards or parameters • Uses formal decision-making processes, identifying information and evaluating several choices against a limited set of criteria • Evaluates effectiveness of planning and design decisions in terms of how well they meet requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
TAEASS401 Plan assessment activities and processes	TAEASS401B Plan assessment activities and processes	Updated to meet Standards for Training Packages. Addition of new element.	No equivalent unit

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Links

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Assessment Requirements for TAEASS401 Plan assessment activities and processes

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must demonstrate the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- planning and organising the assessment process on a minimum of five separate occasions
- planning and organising two Recognition of Prior Learning (RPL) assessments (which may be two of the five assessment processes above.)

The evidence requirements for each occasion must include:

- a documented assessment plan
- a different endorsed or accredited unit of competency (or clusters of units of competency) for each of the five occasions
- contextualisation of the unit(s) of competency and the selected assessment tools, where required
- incorporation of reasonable adjustment strategies
- development of suitable assessment instruments for each of the five occasions

following organisational arrangements.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- obligations of an assessor under applicable legislation and/or standards
- the major features of a unit of competency, and how they are to be addressed in assessment activities and processes
- interpreting competency standards as the minimum standard for assessment
- guidelines for contextualising units of competency

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- different purposes of assessment and different assessment contexts, including RPL
- the purpose and features of evidence, and different types of evidence, used in competency-based assessments, including RPL
- the principles of assessment, and how they guide the assessment process
- the rules of evidence and how they guide the assessment process
- different assessment methods, including their suitability for collecting various types of evidence
- the components of assessment tools

different types of assessment instruments and their purpose and relevance for specific evidence-gathering opportunities.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and which are typical of those experienced in the training and assessment environment. This includes access to the units of competency used in assessment planning activities.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Assessors of this unit must hold the *TAE50116 Diploma of Vocational Education and Training* or the *TAE50111 Diploma of Vocational Education and Training* or be able to demonstrate equivalence of competencies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEASS402 Assess competence

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to implement an assessment plan, and gather quality evidence to assess the competence of a candidate using compliant assessment tools.

It applies to teachers, trainers and assessors in enterprises and registered training organisations (RTOs) and those providing assessment advisory services.

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

Unit Sector

Assessment

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. Prepare for the assessment	1.1 Interpret assessment planning documentation and applicable organisational, legal and ethical requirements for conducting the assessment and confirm with the relevant people 1.2 Access and interpret units of competency that are to be used as benchmarks for assessment, and the nominated assessment tools, to confirm the requirements for the evidence to be collected 1.3 Determine opportunities for integrated assessment activities

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ELEMENT	PERFORMANCE CRITERIA
	and document any changes to the assessment instruments, where required 1.4 Determine opportunities for evidence-gathering in actual or simulated activities, through consultation with the candidate and relevant personnel 1.5 Conduct a candidate briefing and explain, discuss and agree on the details of the planned assessment 1.6 Arrange identified material and physical resource requirements 1.7 Identify any specialist support requirements for the assessment, and organise if necessary
2. Gather quality evidence	2.1 Use agreed assessment methods and tools to gather, organise and document evidence in a format suitable for determining competence 2.2 Apply the principles of assessment and rules of evidence in gathering quality evidence
3. Support the candidate	3.1 Discuss and guide candidates in gathering their own evidence to support the recognition of prior learning (RPL) 3.2 Use appropriate communication and interpersonal skills to develop a professional relationship with the candidate that reflects sensitivity to individual differences and enables two-way feedback 3.3 Make decisions on reasonable adjustments with the candidate, based on the candidate's needs and characteristics 3.4 Access specialist support, if required, in accordance with the assessment plan 3.5 Address any workplace health and safety (WHS) risk to a person or equipment immediately
4. Make the assessment decision	4.1 Assess the collected evidence, and to evaluate whether it reflects the evidence required to demonstrate competence 4.2 Use judgement to infer whether competence has been demonstrated, based on the available evidence 4.3 Make the assessment decision in line with agreed assessment procedures and according to the agreed assessment plan 4.4 Provide clear and constructive feedback to the candidate regarding the assessment decision, and clearly document follow-up, if required
5. Record and report the assessment decision	5.1 Record assessment outcomes promptly and accurately 5.2 Complete and submit required assessment documentation,

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ELEMENT	PERFORMANCE CRITERIA
	according to assessment procedures and confidentiality conventions 5.3 Inform other relevant parties of the assessment decision, according to confidentiality conventions
6. Review the assessment process	6.1 Review the assessment process in consultation with candidates and other relevant people to improve future practice 6.2 Document and record the review according to relevant assessment system policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 4.1	• Accesses and interprets procedural and compliance documentation relevant to the assessment process • Examines and evaluates assessment evidence
Writing	1.1, 1.3, 1.5, 2.1, 3.1, 5.1, 5.2, 5.3, 6.2	• Completes workplace documentation accurately using appropriate language and following organisational requirements
Oral Communication	1.1, 1.4, 1.5, 3.1, 3.4, 4.4, 5.3, 6.1	• Communicates information and assessment process requirements clearly, using techniques appropriate to the audience and environment • Interacts appropriately with candidates to build rapport and understanding, and obtain specific information to support the assessment process
Navigate the world of work	1.1, 3.5, 5.3	• Identifies, confirms and takes responsibility for adherence to legal and ethical requirements • Recognises, and follows, explicit and implicit protocols and meets expectations associated with own role
Interact with others	1.1, 1.4, 1.5, 3.1, 3.2, 3.4, 5.3, 6.1	• Adjusts personal communication style in recognition of the values and experiences of others to build rapport • Cooperates and collaborates with others and contributes to activities requiring joint responsibility

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		and accountability
Get the work done	1.1, 1.2, 1.3, 1.4, 1.6, 1.7, 2.1, 2.2, 3.3, 3.4, 4.1, 4.2, 4.3, 6.1, 6.2	• Uses systematic, analytical processes in complex, non-routine situations, gathering information, and identifying and evaluating options against agreed criteria • Organises work according to specific requirements taking some responsibility for decisions regarding the format of information • With guidance, reviews the effectiveness of solutions in relation to the set goals

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
TAEASS402 Assess competence	TAEASS402B Assess competence	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=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEASS402 Assess competence

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- assessment of at least five candidates within the vocational education and training (VET) context against at least one endorsed or accredited unit of competency according to the organisation's assessment processes and practices.
- using recognition of prior learning (RPL) processes in the assessment of at least one candidate (which may be one of the five candidates above)
- making reasonable adjustments in the assessment of at least one candidate.

The assessments must be undertaken under the supervision of a qualified assessor and cover an entire unit of competency for each candidate, including:

- the application of different assessment methods and instruments involving a range of activities and events
- using two-way communication and feedback with the candidate
- exercising judgement in making the assessment decision
- recording and reporting assessment outcomes in accordance with the assessment system and organisational, legal and ethical requirements

reviewing the assessment process.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- competency-based assessment, including:
  - VET as a competency-based system
  - how competency based assessment differs from other types of assessment
  - competency standards as the basis of qualifications

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  - structure and application of competency standards
  - the principles of assessment and how they are applied
  - the distinction between assessment tools and assessment instruments
  - the rules of evidence and how they are applied
  - the range of assessment purposes and assessment contexts, including RPL
  - different assessment methods, including suitability for gathering various types of evidence, suitability for the content of units, and resource requirements and associated costs
  - reasonable adjustments and when they are applicable
  - types and forms of evidence, including assessment instruments that are relevant to gathering different types of evidence used in competency-based assessment, including RPL
  - the training and assessment strategies, including policies and procedures established by the industry, organisation or training authority
- RPL policies and procedures established by the organisation
- cultural sensitivity and equity considerations in assessment activities
- current legislative requirements relevant to the assessor and the assessment process
- workplace health and safety (WHS) responsibilities associated with assessing competence, including:
  - requirements for reporting hazards and incidents
  - emergency procedures
  - procedures for the use of relevant personal protective equipment
  - the safe use and maintenance of relevant equipment
  - sources of WHS information.

Assessment Conditions

Gather evidence to demonstrate consistent performance in a real assessment environment. The assessment environment must include access to assessment tools and recording materials.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Assessors of this unit must hold the *TAE50116 Diploma of Vocational Education and Training* or the *TAE50111 Diploma of Vocational Education and Training* or be able to demonstrate equivalence of competencies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEASS403 Participate in assessment validation

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to participate in an assessment validation process.

It applies to assessors and workplace supervisors with assessment validation responsibilities participating in, but not necessarily leading, the process.

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

Unit Sector

Assessment

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. Prepare for validation	1.1 Discuss and confirm the purpose, context and scope of the validation process within relevant assessment system policies and procedures 1.2 Arrange materials for validation activities 1.3 Check all documents used in the validation process for accuracy and version control 1.4 Analyse relevant units of competency and agree on the evidence needed to demonstrate competence

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ELEMENT	PERFORMANCE CRITERIA
2. Participate in the validation of assessment tools	2.1 Demonstrate active and appropriate participation in validation sessions and activities using agreed communication methods and modes 2.2 Apply principles of assessment and rules of evidence during validation sessions and activities 2.3 Check that context and conditions of assessment include clear instructions for assessor and candidate and relate directly to the assessment conditions of the relevant unit 2.4 Check that tasks to be administered to the candidate include clear and concise instructions and an outline of evidence requirements 2.5 Check that assessment decision-making rules and benchmarks, are clear and enable consistent outcomes 2.6 Check that recording mechanisms are clear and allow for sufficient information to be recorded 2.7 Review and use assessment maps to assist in determining validity of assessment instruments
3. Contribute to validation outcomes	3.1 Discuss validation findings to support improvements in the quality of assessment in a collective environment 3.2 Discuss, agree and record recommendations to improve assessment practice

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 2.6, 2.7	• Analyses and interprets relevant policies and procedures, benchmarks and validation materials
Writing	1.1, 3.2	• Records key information from the validation process accurately to meet requirements
Oral Communication	1.1, 1.4, 2.1, 2.2, 3.1, 3.2	• Communicates with others to confirm approaches, exchange ideas and information, articulate opinions, and reach agreement with others, using suitable tone, style and language
Navigate the world of work	1.1	• Identifies, confirms and takes responsibility for adherence to policies and procedures
Interact with others	1.1, 2.1, 2.2, 3.1, 3.2	• Collaborates with others and contributes to activities requiring joint responsibility and accountability
Get the work done	1.1, 1.2, 1.3, 1.4, 2.3, 2.4, 2.5, 2.6, 2.7, 3.2	• Organises and prioritises work commitments with a sense of what is achievable within the timeframe • Uses analytical processes in non-routine situations gathering information, and identifying and evaluating options against agreed criteria

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
TAEASS403 Participate in assessment validation	TAEASS403B Participate in assessment validation	Updated to meet Standards for Training Packages. Revised performance criteria.	No equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEASS403 Participate in assessment validation

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- actively participating in a minimum of three validation sessions that address the critical aspects of validation
- clearly identifying the purpose for each validation, and the legal and ethical responsibilities of assessors
- collating and presenting documentation for each validation in a logical manner
- communicating and liaising with relevant people
- providing feedback and interpreting documentation in validation sessions
- recording their contribution to validation findings.
-

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- how to determine the evidence needed to demonstrate competence in a competency-based environment
- the reasons for carrying out validation and different approaches to validation that may be appropriate before, during and after an assessment
- the components of assessment tools
- critical aspects of validation, including validation of assessment processes, methods and products
- how principles of assessment are addressed in validation
- how rules of evidence are addressed in validation
- work health and safety legislation, codes of practice, standards and guidelines that impact on assessment

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- obligations of an assessor under applicable legislation and/or standards, particularly in relation to validation activities.
-

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment, and include access to:

- the texts and tasks usually found in the workplace
- units of competency and other materials used in validation sessions.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Assessors of this unit must hold the *TAE50116 Diploma of Vocational Education and Training* or the *TAE50111 Diploma of Vocational Education and Training* or be able to demonstrate equivalence of competencies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEASS502 Design and develop assessment tools

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to design and to develop assessment tools used to guide the collection of quality evidence, including their application in formative, summative and recognition of prior learning (RPL) assessment.

It applies to experienced practitioners responsible for the development and/or delivery of training and assessment products and services.

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

Unit Sector

Assessment

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. Determine the focus of the assessment tool	1.1 Identify a target group of candidates, purposes of the assessment tool, and the contexts in which the tool will be used 1.2 Access relevant benchmarks for assessment and interpret them to establish evidence required to demonstrate competence 1.3 Identify, access and interpret industry requirements and relevant contextualisation guidelines 1.4 Identify other related documentation to inform assessment tool

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ELEMENT	PERFORMANCE CRITERIA
	development
2. Design the assessment tool	2.1 Select assessment methods that support the collection of defined evidence, taking into account the context in which the assessment will take place, and meeting the principles of assessment 2.2 Enable candidates to show or support their claim for recognition of current competency through selected assessment methods 2.3 Consider different assessment instruments for the selected assessment methods to generate options for collection of evidence 2.4 Consider how the assessment instruments will be administered
3. Develop the assessment tool	3.1 Develop specific assessment instruments that support the collection of evidence that meets the rules of evidence 3.2 Define and document clear and specific procedures instructing assessor and candidate on the administration and use of assessment instruments 3.3 Consider the requirements of assessment system policies and procedures, and address storage and retrieval needs, and review, evaluation and version control procedures as part of this process
4. Review and trial the assessment tool	4.1 Check draft assessment tools against evaluation criteria and amend as required 4.2 Trial assessment tools to validate content and applicability 4.3 Collect and document feedback from relevant people involved in trialling 4.4 Make amendments to the final tool based on the analysis of feedback 4.5 Appropriately format, and file, finalised assessment tool according to assessment system policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 2.4, 3.3, 4.1, 4.3	• Accesses, and interprets, procedural and compliance information, and assessment documentation
Writing	3.1, 3.2, 4.1, 4.3, 4.4, 4.5	• Prepares assessment tools and documentation that incorporates language and format appropriate to the audience • Amends tools in response to feedback
Oral Communication	2.2, 4.2, 4.3	• Participates in communication in order to clarify the purpose and requirements of assessment tools, and to trial assessments
Navigate the world of work	1.3, 3.3, 4.5	• Recognises, and follows, explicit and implicit protocols, policies and procedures, and meets expectations associated with own role • Identifies, confirms and takes responsibility for adherence to organisational, legal and ethical requirements
Interact with others	4.3	• Actively seeks to clarify the perspectives and experiences of others as part of the work role
Get the work done	1.1-1.4, 2.1-2.4, 3.1-3.3 4.1-4.4	• Uses systematic, analytical processes in complex, non-routine situations, gathering information, and identifying and evaluating options against agreed criteria • Organises work according to defined requirements, taking responsibility for decisions and sequencing tasks to achieve efficient outcomes • Seeks new ideas and opportunities, drawing on the diverse perspectives of others to gain insights into current practice and ideas for change

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
TAEASS502 Design and develop assessment	TAEASS502B Design and develop assessment	Updated to meet Standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
tools	tools	Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEASS502 Design and develop assessment tools

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- developing at least three assessment tools that support different assessment methods, and address at least one unit of competency each. Each assessment tool must:
- include the instruments for collecting evidence, reflecting the principles of assessment and the rules of evidence, and related instructions to the assessor/s and candidates
- show how the contextual needs of different environments are addressed

reporting on the trial and review of each assessment tool, including proposed changes.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- the principles of assessment and how they are applied when developing assessment tools
- the rules of evidence and how they have been incorporated in the tools developed
- different assessment contexts and their relationship to developing assessment tools
- the dimensions of competency and how they are incorporated in the development of assessment tools
- the contextualisation of units of competency and contextualisation guidelines
- the components of training packages relevant to the development of assessment tools
- different assessment methods, their purposes and uses
- evaluation methods appropriate to the trial and review of assessment tools
- the principles of reasonable adjustment
- workplace health and safety (WHS) responsibilities associated with assessing competence, including:
  - requirements for reporting hazards and incidents
  - emergency procedures

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- procedures for the use of relevant personal protective equipment
- sources of WHS information.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment, and include access to relevant organisational policies and procedures in relation to the assessment system.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Assessors of this unit must hold the *TAE50116 Diploma of Vocational Education and Training or the TAE50111 Diploma of Vocational Education and Training* or be able to demonstrate equivalence of competencies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEDEL301 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to conduct individual and group instruction, demonstrate work skills and assess the success of training and one's own training performance, using existing learning resources in a safe and comfortable learning environment.

It emphasises the training as being driven by the work process and context, and 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

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise instruction and demonstration	1.1 Gather information about learner characteristics and learning needs 1.2 Confirm a safe learning environment 1.3 Gather and check instruction, demonstration objectives, and seek assistance if required 1.4 Access and review relevant learning resources and learning

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ELEMENT	PERFORMANCE CRITERIA
	materials for suitability and relevance, and seek assistance to interpret the contextual application 1.5 Organise access to necessary equipment or physical resources required for instruction and demonstration 1.6 Notify learners of details regarding the implementation of the learning program and/or delivery plan
2. Conduct instruction and demonstration	2.1 Use interpersonal skills with learners to establish a safe and comfortable learning environment 2.2 Follow the learning program and/or delivery plan to cover all learning objectives 2.3 Brief learners on any workplace health and safety (WHS) procedures and requirements prior to, and during, training 2.4 Use delivery techniques to structure, pace and enhance learning 2.5 Apply coaching techniques to assist learning 2.6 Use communication skills to provide information, instruct learners and demonstrate relevant work skills 2.7 Provide opportunities for practice during instruction and through work activities 2.8 Provide and discuss feedback on learner performance to support learning
3. Check training performance	3.1 Use measures to ensure learners are acquiring, and can use, new technical and generic skills and knowledge 3.2 Monitor learner progress and outcomes in consultation with the learner 3.3 Review relationship between the trainer/coach and the learner, and adjust to suit learner needs
4. Review personal training performance	4.1 Reflect upon personal performance in providing instruction and demonstration, and document strategies for improvement 4.2 Maintain, store and secure learner records, according to organisational and legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Learning	4.1	• Reflects on practice to improve
Reading	1.1, 1.3, 1.4, 2.2	• Sources and interprets processes and procedures, learning resources and information relevant to providing a work instruction and delivery
Writing	1.4, 1.6, 2.3, 2.6, 2.8, 3.2, 4.1, 4.2	• Accurately maintains learner records and documentation appropriate to the learning context and audience
Oral Communication	1.1, 1.6, 2.3, 2.4, 2.6	• Uses appropriate communication strategies to engage, build rapport, provide instruction, monitor progress and provide feedback to individuals or groups
Interact with others	1.2, 1.3, 2.1, 2.5, 2.8, 3.2	• Recognises the importance of consultation and negotiation while collaborating to confirm strategy and achieve required outcomes • Asks questions in order to clarify understanding, and to provide and seek feedback • Builds rapport to establish effective working relationships and to achieve effective outcomes
Get the work done	1.1-1.6, 2.1-2.8, 3.1-3.3, 4.1, 4.2	• Organises and completes work according to defined requirements, taking responsibility for some decisions and sequencing tasks to achieve efficient outcomes • Identifies and responds to potential risks, problems and opportunities for improvement and considers options for different approaches

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
TAEDEL301 Provide work skill instruction	TAEDEL301A Provide work skill instruction	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEDEL301 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- carrying out a minimum of three training sessions, involving demonstrating and instructing particular work skills for at least two different individuals or small groups, with each session addressing:
  - different learning objectives
  - a range of delivery techniques and effective communication skills appropriate to the audience.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- learner characteristics and needs
- the content and requirements of the relevant learning program, and/or the delivery plan
- the sources and availability of relevant learning resources and learning materials
- the content of relevant learning resources and learning materials
- training techniques that enhance learning, and when to use them
- introductory knowledge of learning principles and learning styles
- key workplace health and safety (WHS) issues in the learning environment, including:
  - roles and responsibilities of key personnel
  - responsibilities of learners
  - relevant policies and procedures, including hazard identification, risk assessment, reporting requirements, safe use of equipment and emergency procedures
  - risk controls for the specific learning environment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment and include access to any necessary workplace documents.

Assessors 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=35337905-785d-4f93-8777-e9991ad4c6c3

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TLID2010 Operate a forklift

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 involves the skills and knowledge required to operate a forklift in compliance with the relevant state/territory authority licence requirements and regulations, in a variety of operational contexts.

It includes checking forklift condition, driving forklift to fulfil operational requirements, and monitoring and maintaining forklift performance and site conditions.

Assessment of this unit will usually be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory work health and safety (WHS)/occupational health and safety (OHS) authority.

Operation of a forklift is performed under some supervision, generally within a team environment.

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

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

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Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Check forklift condition	1.1 Condition of forklift is checked for compliance with WHS/OHS and workplace requirements for warning devices, manufacturer specifications and nature of load shifting task
	1.2 Attachments are checked to ensure appropriate adjustment and operation
	1.3 Mirrors and seats are adjusted for safe operation by driver
	1.4 Logbooks are checked and appropriate workplace documentation is completed in accordance with workplace requirements
2 Drive forklift	2.1 Forklift is started, steered, manoeuvred, positioned and stopped in accordance with regulations and manufacturer instructions
	2.2 Engine power is managed to ensure efficiency and performance and to minimise engine and gear damage
	2.3 Operational hazards are identified and/or anticipated and avoided or controlled through defensive driving and appropriate hazard control techniques
	2.4 Forklift is driven in reverse, maintaining visibility and achieving accurate positioning
	2.5 Forklift is parked, shut down and secured in accordance with manufacturer specifications, regulations and workplace procedures
3 Operate forklift to handle loads	3.1 Lifting task to be undertaken is appropriately planned, and correct lifting truck and attachments are selected
	3.2 Load is lifted, carried, lowered and set down in accordance with WHS/OHS legislation, manufacturer specifications and company procedures
4 Monitor site conditions	4.1 Hazards and traffic flow are identified when selecting the most efficient route and appropriate adjustments are made
	4.2 Site conditions are assessed to enable safe operations and to ensure no injury to people or damage to property, equipment, loads or facilities occurs

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5 Monitor and maintain forklift performance	5.1 Performance and efficiency of vehicle operation is monitored during use
	5.2 Defective/irregular performance and malfunctions are reported to relevant personnel
	5.3 Forklift records are maintained/updated in accordance with workplace procedures and legislative 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 can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLID2010A Operate a forklift.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID2010 Operate a forklift

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 of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- checking and replenishing fluids, and carrying out lubrication processes
- communicating and working effectively with others
- completing relevant documentation
- ensuring forklift and its equipment are maintained in terms of service schedule and standard operating procedures
- identifying points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring performance of forklift and its equipment, and taking appropriate action as required
- monitoring and prioritising work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with standard operating procedures
- operating electronic communications equipment to required protocol
- reading, interpreting and following relevant instructions, procedures, information and signs
- reporting and/or rectifying identified problems, faults or malfunctions promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using required personal protective equipment conforming to industry and WHS/OHS standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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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:

- efficient driving techniques
- engine power management and safe operating strategies
- forklift controls, instruments and indicators, and their use
- forklift handling procedures
- high risk work licence requirements
- operating hazards and related defensive driving and hazard control techniques
- operational emergency procedures
- pre-operational checks carried out on forklift and related action
- principles of stress management when driving a forklift
- relevant duty of care requirements for operating a forklift
- relevant WHS/OHS and environmental procedures and regulations
- site layout and obstacles
- workplace operating 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 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 include:

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

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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UEPOPL001 Licence to operate a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

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 rpm 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 Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulators for the purpose of licensing.

Pre-requisite Unit

There are no prerequisite units

Competency Field

Licensing

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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 work	**1.1** Type of operations to be conducted for steam turbine are assessed and prepared
	1.2 Steam turbine operations are planned, in accordance with procedures
	1.3 Personal Protective Equipment (PPE) is selected for use, ensuring statutory requirements and procedures are followed
	1.4 Hazards and potential hazards in work area are identified and assessed for risk, and controls recommended are consistent with appropriate standards
	1.5 Appropriate communication methods are identified, in accordance with 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 consistent with appropriate standards
	2.3 Availability of quality steam from upstream provider is confirmed
	2.4 Preoperational safety checks of steam turbine are conducted, in accordance with procedures
	2.5 Start-up checks are performed upon ancillary plant
	2.6 Maintenance requirements are identified and reported, in accordance with procedures
	2.7 Steam turbine is started and brought up to speed and placed on line safely, in accordance with procedures, including performance of start-up checks

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3 Monitor steam turbine operation	**3.1**	Steam turbine is monitored, in accordance with required procedures, including performing of operational checks and fault finding
	3.2	Operating log is maintained clearly and accurately, in accordance with established procedures
	3.3	Operating status of steam turbine is diagnosed and verified
	3.4	Status of steam turbine is communicated to other operational personnel, including downstream users of steam turbine output power
	3.5	Steam turbine emergencies and contingencies are dealt with, in accordance with local workplace procedures, manufacturers' specifications and environmental requirements
4 Shut down steam turbine	**4.1**	Energy isolation procedures are followed
	4.2	Routine shutdown of steam turbine is performed, in accordance with operational and manufacturers' requirements and procedures, including performing shut down checks
	4.3	Maintenance requirements are identified, recorded and reported, in accordance with 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.

appropriate standards must include	but not be limited to: • codes of practice • state, territory and federal legislation • Australian standards • manufacturers’ specifications

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communicated and communication must include	• but not be limited to: • verbal • written • telephone • two-way radio • log records • computer record systems
emergencies must include	• but not be limited to: • fire • bomb threat • terrorism • personal accidents • chemical spills • major steam leaks • major water leaks • and flooding • natural disasters
faults must 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/or differentials • loss of condenser vacuum • condenser tube leak • high dissolved oxygen • conductivity • high steam turbine bearing temperatures or vibration • high or low bearing oil temperatures • loss of steam turbine bearing oil flow or pressure • low or high pressure heaters malfunction • actuator, valve, mechanical and electrical faults or failure • instrument failure • steam turbine protection

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hazards must 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 fuel • obstructions in the work area • fire • noise • vibration • water and working at heights
operational checks must 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 and steam reticulation line pressure • operation of control or safety devices
Personal Protective Equipment (PPE) must include	• but not be limited to: • prescribed under legislation, regulations, codes of practice and workplace policies and procedures • hard hat, safety boots, gloves and high visibility clothing • breathing, hearing, sight, skin and sun protection • fall arrest equipment such as harnesses and lanyards, horizontal lines and inertia reel
preoperational safety checks must include	• but not be limited to: • steam supply system • position and operation of steam turbine valves • safety devices

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- overspeed shutdown
- pressure relieve devices
- speed governor
- exhaust system
- auxiliary equipment
- lubrication system

procedures must include

- but not be limited to:
  - manufacturers' instructions, specifications or checklists
  - industry operating procedures
  - workplace procedures including instructions, operating procedures and checklists

recorded information must 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
  - log book and proformas
  - production reports and maintenance records

simulated training must include

- reproduction of conditions in working situation
- enabling tasks to be learned and practised safely and economically

shut down checks must 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

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	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
industrial 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 rpm may include: • axial flow • back pressure • condensing • impulse • non-condensing pass out • radial flow • reaction and velocity compounding steam turbines with a power output of greater than 500kw • 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 must include	• but not be limited to: • identification of type of emergency • isolation of steam supply • selection and application of appropriate firefighting equipment • notification of upstream steam supplier • operation of steam turbine only when safe to do so

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testing must 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 UEPOPL001A 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

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Assessment Requirements for UEPOPL001 Licence to operate a steam turbine

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 one occasion and includes:

- communicating effectively and working safely with others in the work area
- completing verification of problems and steam turbine equipment faults and demonstrating appropriate response procedures
- compliance with Commonwealth, state or territory regulations for the acquisition of a high risk work licence for steam turbine operation
- compliance with legislation, regulations, standards, codes of practice and established safe practices and procedures for starting, operating, shutting down and maintaining a steam turbine
- compliance with organisational and site policies and procedures including quality requirements and state or territory legislation applicable to workplace operations
- compliance with WHS and environmental regulations, policies and procedures
- controlling and monitoring any ancillary equipment which may be connected or interfaced to the steam turbine recording accurately and maintaining information related to operation of a steam turbine
- identifying hazards associated with the operation of the steam turbine and put 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 appropriate 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 includes knowledge of:

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- basic principles of heat transfer and thermodynamics
- Commonwealth, state or territory WHS legislation, regulations, standards and codes of practice relevant to the full range of techniques for operating steam turbines
- 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
- established communication channels and protocols in the workplace
- organisational and workplace standards, requirements, policies and procedures for starting, operating, shutting down and maintaining a steam turbine
- procedures for the recording, reporting and maintenance of workplace records and information
- safety data sheets 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 their interaction with other plant and equipment.
- typical routine problems encountered in the process and with equipment and adjustments required for correction
- understanding of the hierarchy of hazard identification and control

Assessment Conditions

Assessments must be conducted by an assessor accredited for this High Risk Work (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).

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 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 acceptable.

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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

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UEPOPS319 Operate and monitor gas production plant

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 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 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.

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

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

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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** Safety issues related to the operating and monitoring of gas production plant are identified, in accordance with workplace procedures and Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations and legislative requirements
	1.2 Work requirements are identified from appropriate 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 workplace procedures and manufacturers recommendations
	1.5 Gas production plant operational prerequisites are established, in accordance with workplace procedures and manufacturers' recommendations
	1.6 Sequence for recommissioning of gas production plant is determined, in accordance with workplace procedures and site requirements
2 Operate gas production plant	**2.1** Gas production plant is operated, in accordance with workplace procedures and manufacturers' operating recommendations
	2.2 Gas production plant is monitored and observed, in accordance with workplace procedures, to detect deviations from normal operating conditions
	2.3 Corrective actions are taken to rectify abnormalities, in accordance with workplace procedures and manufacturers' recommendations
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 correct operational

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		response, in accordance with workplace procedures
	3.3	Corrective action is taken, in accordance with workplace procedures when response does not meet with documentation, gas production plant integrity or personnel safety requirements
	3.4	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, in accordance with workplace procedures, and by analysing technical and operational information
	4.2	Corrective action is taken, in accordance with workplace procedures
	4.3	Gas production plant integrity and personnel safety is maintained, in accordance with workplace procedures, and in consultation with appropriate personnel and technical and operational documentation
5 Monitor and inspect gas production plant	**5.1**	Gas production plant to be monitored and/or inspected is physically identified, in accordance with workplace procedures
	5.2	Gas production plant is monitored and/or inspected, in accordance with workplace procedures, for normal operation or to detect deviations
	5.3	Corrective action is taken, in accordance with workplace procedures
	5.4	Appropriate personnel are notified, in accordance with workplace procedures, when defects are detected
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

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competency.

Range of Conditions

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 UEPOPS319B 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

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Assessment Requirements for UEPOPS319 Operate and monitor gas production plant

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:

- 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 legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- monitoring and inspecting gas production plant operations
- operating gas production plant
- organising resources
- preparing and planning work
- preparing gas production plant and/or equipment for operation
- recognising and responding to abnormal gas production plant operating conditions
- testing gas production plant operations 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, performance criteria and range of conditions and includes knowledge of:

- gas production plant and equipment, its location and operating parameters
- gas production plant status

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- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
  - 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

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PMA Chemical, Hydrocarbons and Refining

Modification History

Version	Release date	Comments
2.0	30 October 2020	Release 2.
1.0	2 June 2016	Release 1. Initial Release.

Credit Arrangements

At the time of endorsement of this Training Package no national credit arrangements exist.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875

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PMASS00013 Pipeline liquids transmission

Modification History

Release 1 – new skill set

Description

Hydrocarbon liquid transmission by pipeline occurs over long distances, typically from wells/well head processing to port or further processing. These pipelines need to be monitored and operated, from a control station which is remote from most or all of the pipeline.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing.

Skill Set Requirements

PMAOPS221	Operate and monitor prime movers
PMAOPS222	Operate and monitor pumping systems and equipment
PMAOPS223	Operate and monitor valve systems
PMAOPS230	Monitor, operate and maintain pipeline stations and equipment

Target Group

Individuals who operate liquid transmission pipelines.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for a liquids transmission pipeline operator.

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Custom Content Section

Not applicable.

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PMASS00014 Pipeline gas transmission

Modification History

Release 2. Superseded units updated, equivalent outcome.

Release 1. New skill set.

Description

Hydrocarbon gas transmission by pipeline occurs over long distances, typically from wells/well head processing to port or further processing. These pipelines need to be monitored and operated, from a control station which is remote from most or all of the pipeline.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing.

Skill Set Requirements

PMAOPS221	Operate and monitor prime movers
PMAOPS314	Operate and troubleshoot compressor systems
PMAOPS223	Operate and monitor valve systems
PMAOPS230	Monitor, operate and maintain pipeline stations and equipment

Target Group

Individuals who operate gas transmission pipelines.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for a gas transmission pipeline operator.

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PMASS00015 Workplace assessor, trainer, coach

Modification History

Release 1 – new skill set

Description

This skill set is intended for personnel whose main role is operational, but who as part of their role assist in the competency development of other personnel and then assess their competency to an appropriate standard. The competency development role may be a formal part of their role, or just the normal expectation in the workplace of more experienced personnel assisting in the development of less experienced personnel. The assessment units are included so as to qualify complying personnel as assessors.

Pathways Information

These units of competency can provide credit towards Certificates III and IV in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, however to be a qualified assessor competency must be achieved in the four TAEASS units.

Skill Set Requirements

TAEASS401	Plan assessment activities and processes
TAEASS402	Assess competence
TAEASS403	Participate in assessment validation
TAEASS502	Design and develop assessment tools
TAEDEL301	Provide work skill instruction
MSMSUP382	Provide coaching/mentoring in the workplace

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Target Group

Individuals who as part of their role assist in workplace competency development and assess competency. They may not be a formally designated trainer.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for a workplace assessor, trainer, coach.

Custom Content Section

Not applicable.

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PMASS00016 Confined space work team

Modification History

Release 1. Supersedes and is equivalent to PMASS00001 Confined space work team. Units updated.

Description

This skills set covers the competencies required by persons to work safely in a confined space and to comply with the relevant Australian Standard AS 2865. Competency is required to be achieved prior to entry into a confined space – see units for details.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, but compliance with AS2865 is required.

Skill Set Requirements

MSMWHS200 Work safely

MSMPER200 Work in accordance with an issued permit

MSMPER202 Observe permit work

MSMPER205 Enter confined space

Target Group

Individuals who are required to enter a confined space. ‘Entry’ and ‘confined space’ are defined in accordance with AS2865.

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Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for members of a confined space work team.

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PMASS00017 Contractor induction

Modification History

Release 1. Supersedes and is equivalent to PMASS00002 Contractor induction. Units updated.

Description

This skill set covers the competencies required by persons working in the chemical, hydrocarbons and refining sector and who will be working in the plant. It particularly applies to contractors who need a safety induction for each site.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although safety and permit competencies may be required under a risk management plan.

Skill Set Requirements

MSMWHS200 Work safely

MSMPER200 Work in accordance with an issued permit

Target Group

Individuals who are required to work in process/plant areas in the chemical, hydrocarbons and refining sectors.

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Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for contractor safety.

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PMASS00018 Emergency centre team

Modification History

Release 2. Superseded units updated, equivalent outcome.

Release 1. Supersedes and is equivalent to PMASS00003 Emergency centre team. Units updated.

Description

Plant/site emergencies require management of the response from an internal team at the designated emergency centre.

This skill set covers the competencies required by persons working in the emergency centre. This would not normally be their full time job, but a role they assume as required by the situation

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates III and IV and the Diploma in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

PMAOMIR322 Manage incident response information

PMAOMIR317 Facilitate search and rescue operations

PMAOMIR449 Monitor legal compliance obligations during incidents

PMAOMIR523 Manage corporate media requirements in a crisis

PMAOMIR575 Coordinate welfare support activities in response to an incident

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In some situations it may be appropriate to add:

PMAOMIR424 Develop and maintain community relationships.

Target Group

Individuals who, as part of their role, are required to work in the emergency centre during a declared incident.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for emergency centre personnel.

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PMASS00019 Hot work observer

Modification History

Release 1. Supersedes and is equivalent to PMASS00004 Hot work observer. Units updated.

Description

Hot work in a hazardous environment requires a hot work observer, often called colloquially a ‘fire watcher’. Hot work is covered by AS1674. The role of this person is to ensure hot work permit conditions are followed and fire is prevented.

This skill set covers the competencies required by persons working as hot work observers. This would not normally be their full time job, but a role they assume as required by the situation

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan and compliance with AS1674 is required..

Skill Set Requirements

MSMWHS200 Work safely

MSMPER200 Work in accordance with an issued permit

MSMPER202 Observe permit work

MSMWHS212 Undertake first response to fire incidents

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Target Group

Individuals who, as part of their role, are required to observe hot work and ensure compliance with the hot work permit.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for a hot work observer/standby person.

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PMASS00020 Incident response commander

Modification History

Release 2. Superseded units updated, equivalent outcome.

Release 1. Supersedes and is equivalent to PMASS00005 Incident response commander. Units updated.

Description

The incident commander takes charge of the organisation's response to an incident and may have several incident response teams under their direction. This role requires specific non-operational competencies.

This skills set covers the competencies required by persons working as incident commanders. This would not normally be their full time job, but a role they assume as required by the situation

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates III and IV in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

PMAWHS310 Investigate incidents

PMAOMIR418 Coordinate incident response

PMAOMIR444 Develop incident containment tactics

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PMAOMIR322 Manage incident response information

PMAWHS511 Manage emergency incidents

Target Group

Individuals who, as part of their role, are required to assume the incident commander role when the situation requires it.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an incident commander.

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PMASS00021 Incident response team leader

Modification History

Release 2. Superseded units updated, equivalent outcome.

Release 1. Supersedes and is equivalent to PMASS00006 Incident response team leader. Units updated.

Description

Incidents are controlled using an incident response team led by an incident response team leader.

This skill set covers the competencies required by persons working as incident team leaders. This would not normally be their full time job, but a role they assume as required by the situation.

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates III and IV in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

PMAWHS311 Lead emergency teams

PMAOMIR317 Facilitate search and rescue operations

PMAOMIR322 Manage incident response information

PMAOMIR346 Assess and secure an incident site

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Target Group

Individuals who, as part of their role, are required to assume the incident team leader role when the situation requires it.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an incident team leader.

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PMASS00022 Incident response team member

Modification History

Release 2. Unit code updated. Equivalent outcome.

Release 1. Units updated. Supersedes and is equivalent to PMASS00007 Incident response team member.

Description

Incidents are controlled by an incident response team.

This skills set covers the competencies required by persons working in an incident response team. This would not normally be their full time job, but a role they assume as required by the situation.

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

MSMWHS205 Control minor incidents

MSMWHS210 Undertake first response to non-fire incidents

MSMWHS212 Undertake first response to fire incidents

MSMWHS216 Operate breathing apparatus

MSMWHS217 Gas test atmospheres

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HLTAID011	Provide First Aid
MSMPER200	Work in accordance with an issued permit
MSMPER205	Enter confined space
PMAWHS213	Undertake fire control and emergency rescue
PMAOMIR301	Undertake initial rescue

Target Group

Individuals who, as part of their role, are part of an incident response team when the situation requires it.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an incident team member.

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PMASS00023 Offshore crane driver

Modification History

Release 1. Supersedes and is equivalent to PMASS00008 Offshore crane driver. Units updated.

Description

Cranes are used in an offshore environment to bring loads from a ship/barge onto a platform, loads from a platform onto a ship/barge and to move loads around the platform. Apart from the exposure to weather, the significant difference with offshore crane driving is that loads are lifted to/from a surface which is in constant, three dimensional motion, so requiring additional skills from the crane driver.

This skills set covers the competencies required by persons working as crane drivers in an offshore environment.

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing may be required. Check local regulatory requirements for details. At the time of writing, NOPSEMA (National Offshore Petroleum Safety and Environmental Management Authority) is the relevant regulatory authority for offshore. The offshore facility's safety case may also mandate competency requirements.

Skill Set Requirements

PMASUP305 Operate offshore cranes

PMASUP237 Undertake crane, dogging and load transfer operations

MSMSUP205 Transfer loads

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Target Group

Individuals who operate cranes in an offshore environment.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an offshore crane driver.

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PMASS00024 Offshore incident response team member

Modification History

Release 2. Unit code updated. Equivalent outcome.

Release 1. Units updated. Supersedes and is equivalent to PMASS00009 Offshore incident response team member.

Description

Incidents are controlled by an incident response team. A broader range of competencies is required when responding to an offshore incident.

This skills set covers the competencies required by persons working in an offshore incident response team. This would not normally be their full time job, but a role they assume as required by the situation

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

MSMWHS205 Control minor incidents

MSMWHS210 Undertake first response to non-fire incidents

MSMWHS212 Undertake first response to fire incidents

MSMWHS216 Operate breathing apparatus

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MSMWHS217	Gas test atmospheres
HLTAID011	Provide First Aid
MSMPER200	Work in accordance with an issued permit
MSMPER205	Enter confined space
PMAWHS213	Undertake fire control and emergency rescue
PMAOMIR301	Undertake initial rescue
PMAOMIR302	Respond to a helideck incident

Target Group

Individuals who, as part of their role, are part of an incident response team in an offshore environment when the situation requires it.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an offshore incident team member.

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PMASS00025 Offshore operator safety induction

Modification History

Release 1. Supersedes and is equivalent to PMASS00010 Offshore operator safety induction. Units updated.

Description

Persons working offshore require a range of competencies before being deployed offshore. These are safety competencies relating to transport to/from the offshore facility and abandonment of that facility.

Competency is required to be achieved prior to undertaking this role – see units for details.

This is an industry defined skill set.

Pathways Information

These units of competency can provide credit towards Certificates II and III in PMA Chemical, Hydrocarbons and Refining Training Package.

Licensing/Regulatory Information

Licensing is not required at the time of writing, although these competencies may be required under a risk management plan.

Skill Set Requirements

MSMWHS110	Follow emergency response procedures
MSMWHS200	Work safely
MSMWHS205	Control minor incidents
PMAWHS214	Undertake helicopter safety and escape
PMAWHS215	Apply offshore facility abandonment and sea survival procedures and practices

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Target Group

Individuals who work in an offshore environment such as an oil/gas platform, FSO/FPSO, or FLNG facility.

Suggested words for Statement of Attainment

These competencies from PMA Chemical, Hydrocarbons and Refining Training Package meet the minimum requirements for an offshore safety induction.

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