



Australian Government

UETTD RRT35 Install and maintain traction network equipment and components

Release: 1

UETTDRT35 Install and maintain traction network equipment and components

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Application

This unit covers the installation and maintenance of the overhead traction electrical equipment and components as well as associated hardware, including ancillary equipment.

It includes the repair or replacement of like-for-like electrical components/equipment and associated hardware and the undertaking of safe working practices on or about the running line/track. It also encompasses the isolation of systems and circuits for safe working according to work plans and the correct positioning of road signs, barriers and/or warning devices and the procedure of issuing/accepting electrical permits.

It also includes the visual inspection and necessary checks to confirm that equipment, components and associated hardware have been correctly installed according to design and are in a safe condition to test prior to putting to service, the undertaking of pre-commissioning tests as required to ensure the integrity of the traction system prior to putting back into service and the updating of installation data and relevant quality assurance documentation.

The application of the skills and knowledge described in this unit requires a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

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

Pre-requisite Unit

Common Unit Group

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG033A Solve problems in single and three phase low voltage electrical apparatus and circuits

UEENEEG063A Arrange circuits, control and protection for general electrical installations

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG103A Install low voltage wiring and accessories

UEENEEG104A Install appliances, switchgear and associated accessories for low voltage electrical installations

UEENEEG105A Verify compliance and functionality of low voltage general electrical installations

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

UEENEEG107A Select wiring systems and cables for low voltage general electrical installations

UEENEEG108A Trouble-shoot and repair faults in low voltage electrical apparatus and circuits

UEENEEG109A Develop and connect electrical control circuits

UEENEEK142A Apply environmentally and sustainable procedures in the energy sector

UETTDREL16 Working safely near live electrical apparatus

UETTDRI62 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

UETTDRI63 Implement & monitor power system environmental & sustainable energy management policies & procedures

UETTDRI67 Solve problems in energy supply network equipment

UETTDRT34 Install and maintain traction network wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Prepare for the installation and maintenance of traction network equipment/components

- 1.1** Work schedules, including drawings, plans, requirements, established procedures and material lists, are received, analysed and confirmed, as necessary, by site inspection
- 1.2** Relevant requirements and established procedures for the work are communicated to all personnel and identified for all worksites
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS) policies and procedures related to requirements and established procedures for the installation and maintenance of overhead traction equipment/components are obtained and confirmed for the purposes of the work to be performed and communicated to relevant personnel
- 1.4** Work is prioritised and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures prioritised, implemented and monitored, including emergency exits kept clear, according to established procedures
- 1.6** Relevant work permits are obtained to access and perform work according to requirements and/or established procedures
- 1.7** Resources, including personnel, equipment, tools and personal protective equipment (PPE), required for the job are obtained and confirmed in working order
- 1.8** Relevant personnel at worksite are confirmed current in cardiopulmonary resuscitation (CPR), first aid, and other rescue procedures according to requirements
- 1.9** Liaison and communication issues with others/authorised personnel, authorities, clients and land owners are resolved to carry out work where necessary
- 1.10** Site is prepared according to the work schedule and to minimise risk and damage to property, commerce and individuals in accordance with established procedures
- 1.11** Personnel participating in the work, including plant

operators and contractors, are fully briefed and respective responsibilities confirmed where applicable in accordance with established procedures

1.12 Rail/road signs, barriers and warning devices are positioned in accordance with requirements

1.13 Environmental constraints applicable to work are identified and control measures applied

2 Carry out the installation and maintenance of traction network equipment/components

2.1 WHS/OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimise waste are monitored and followed in accordance with requirements and/or established procedures

2.2 Lifting, climbing, working aloft, and use of power tools/equipment, techniques and practices are safely followed and currency according to requirements confirmed

2.3 Systems and circuits are isolated as required, proved safe to work on in accordance with the requirements/permits and established procedures

2.4 Essential knowledge and associated skills are applied in the safe installation of overhead traction equipment/components to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements

2.5 Electrical components/equipment and associated hardware are positioned, secured and terminated/connected in accordance with requirements and established procedures

2.6 Electrical component/equipment and associated hardware is ascertained as operating within normal operating parameters and in accordance with requirements and established procedures

2.7 Maintenance, including repair and/or replacement of overhead traction equipment/components, is carried out in accordance with the work schedule and requirements/established procedures

2.8 Hazard warnings and safety signs are recognised and hazards and assessed WHS/OHS risks are reported to immediate authorised personnel for directions according

- to established procedures
- 2.9** Unplanned events during the installation of overhead traction equipment/components are responded to within the scope of established procedures
 - 2.10** Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills
 - 2.11** Ongoing checks of quality of the work are undertaken in accordance with instructions and established procedures
- 3 Complete the installation and maintenance of traction network equipment/components**
- 3.1** Work undertaken is checked against design drawings and work schedule for conformance with requirements and anomalies reported in accordance with established procedures
 - 3.2** Worksite is rehabilitated, cleaned up and made safe in accordance with established procedures
 - 3.3** Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures
 - 3.4** Relevant work permits are signed off after final inspections and the system is energised, tested and returned to service in accordance with requirements
 - 3.5** Work completion records, reports, as installed//modified drawings and/or documentation and information are finalised and processed and appropriate personnel notified

Foundation Skills

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

Range of Conditions

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 UETTDRT35A Install and maintain traction network equipment and components.

Links

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETTDRT35 Install and maintain traction network equipment and components

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Performance Evidence

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

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- installing and maintaining traction network equipment and components incorporating at least two (2) of the following:
 - fuse switches
 - dropout fuses
 - section insulators
 - switches/isolators
 - links
 - fuses
 - surge diverters
 - transformers
- installing and maintaining traction network equipment and components must incorporate at least five (5) of the following:
 - cantilever hardware
 - head span
 - neutral sections
 - pull offs
 - registration fittings
 - steady span
 - tension regulators
 - cross spans
 - tramway support network
 - pendulum
- incorporating at least two (2) of the following:
 - preformed fittings

- compression fittings
- wedge fittings
- bolted splices
- incorporating at least three (3) of the following:
 - feeders
 - dissimilar conductors
 - lugs
 - bolted clamp
 - drapes/potential jumper
 - droppers
- incorporating at least two (2) of the following:
 - voltage detectors
 - micrometer/gauge
 - tension wrench
 - dynamometer
 - specialised tools
- dealing with unplanned events on at least one (1) occasion.

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:

- overhead traction equipment encompassing:
 - types - switches/isolators, fuse switches, links, section insulators and fuses
 - purpose
- types of overhead traction components encompassing:
 - types - cantilever hardware, droppers, bay components, portal hardware, head span hardware, section insulators, neutral sections, registration fittings, steady span, tension regulators and cross spans
 - purposes
- types of conductors used for overhead wiring encompassing:
 - hard-drawn; computer-aided drafting (CAD); and tin-bearing copper, aluminium, steel and other alloyed conductors
- types of traction wire support structures that may consist of portals, cantilevers, drop pieces, head spans, cross spans and pull-offs
- ancillary equipment encompassing:
 - types - surge arresters, booster and auxiliary transformers
 - purpose
- methods for installing/replacing conductors encompassing:
 - preformed fittings

- compression fittings
- wedged fittings
- bolted splices
- lugs
- bolted clamps
- methods for installing/replacing components encompassing:
 - feeders
 - droppers
 - dissimilar conductors
 - jumpers
 - surge arresters
- use of plant and equipment for installation/maintenance work encompassing:
 - elevated work platforms (EWP)
 - ladders
 - works trains
 - rail-mounted overhead wiring equipment/vehicles
 - road/rail height access machinery/vehicles
 - voltage detectors
 - micrometer/gauges
 - tension wrenches
 - dynamometers
 - other specialised tools.

Assessment Conditions

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

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

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

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

Resources for assessment must include access to:

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

regulations, codes of practice and operation manuals.

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