



Australian Government

UETTD RRT99 Test and verify rail traction installations

Release: 1

UETTDRT99 Test and verify rail traction installations

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 involves the skills and knowledge required to test and verify rail traction installations in the electricity supply industry (ESI).

It includes inspecting, testing and verifying rail traction installations are safe and comply with all requirements. It also includes working safely, carrying out visual inspections and mandatory, optional and functional test procedures, identifying non-compliance defects and mandatory reporting requirements.

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

Other conditions may apply under State and Territory legislative and regulatory licensing requirement 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

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDREL16 Working safely near live electrical apparatus

UETTDRI52 Install and maintain poles, structures and associated hardware

UETTDRI54 Install and maintain poles, structures and overhead conductors and cables

UETTDRT21 Install traction overhead wiring systems

UETTDRT22 Maintain traction overhead wiring systems

UETTDRT27 Install overhead traction components and equipment

UETTDRT28 Maintain overhead traction components and equipment

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to inspect, test and verify rail traction installations

PERFORMANCE CRITERIA

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

- 1.1** Work schedules, construction plans, drawings, workplace procedures and material lists are received and confirmed
- 1.2** Job requirements and workplace procedures are identified and communicated with relevant personnel
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS), environmental and workplace procedures for accessing, testing and verification of rail traction installations are obtained and confirmed for the purposes of the work to be performed
- 1.4** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures identified in accordance with workplace procedures
- 1.6** Relevant work permits are obtained to access rail corridor, understood and signed in accordance with workplace procedures

- 1.7 Plant, equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
 - 1.8 Specialist test and measurement equipment for testing and verification of rail traction installations are obtained, inspected, calibrated and confirmed in working order in accordance with workplace procedures
 - 1.9 Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with track protection officer and/or network control officer and workplace procedures
 - 1.10 Traffic management plan is confirmed as being applied in accordance with workplace procedures
- 2 **Carry out visual inspection, test and verification of Rail Traction installation**
 - 2.1 WHS/OHS, sustainable energy and environmental principles and practices are monitored and followed to reduce incidents in accordance with workplace procedures
 - 2.2 Requirements for lifting and/or climbing and/or working at heights and the use of power tools/equipment are followed in accordance with workplace procedures
 - 2.3 Testing and verification of rail traction installations are completed in agreed timeframes, to quality standards and with minimum waste in accordance with workplace procedures
 - 2.4 Rail traction installations and associated hardware are visually inspected and confirmed as positioned, secured and terminated/connected in accordance with job requirements and workplace procedures
 - 2.5 Energised tests and/or measurements, as required, to verify rail traction installations are determined in accordance with WHS/OHS requirements and conducted within workplace safety procedures
 - 2.6 Rail traction installations are checked for suitability and compliance with organisational construction standards and relevant electrical rail traction network supply standards
 - 2.7 Rail traction installation protection methods and devices are validated as meeting organisational construction and relevant rail traction network protection standards

- 2.8** Rail traction installation switchgear is appropriately rated and validated, meeting functional requirements of organisational construction and relevant distribution network protection standards
 - 2.9** Rail traction installations earthing system and multiple earth neutral (MEN) system components are installed and compliance verified in accordance with workplace construction procedures and distribution network standards
 - 2.10** Mandatory tests are conducted to verify rail traction installation is in accordance with workplace procedures
 - 2.11** Solutions used to solve problems are applied in accordance with workplace procedures
 - 2.12** Quality checks of work are undertaken in accordance with workplace procedures
- 3 Report inspection and test findings**
 - 3.1** WHS/OHS risk control work completion measures and procedures are followed
 - 3.2** Completed work is checked against work schedule, construction plans and drawings for compliance and anomalies are reported in accordance with workplace procedures
 - 3.3** WHS/OHS and environmental incidents are reported in accordance with workplace procedures, as required
 - 3.4** Worksite is rehabilitated, cleaned up and made safe in accordance with workplace procedures
 - 3.5** Non-compliance defects are identified, corrected and/or reported in accordance with workplace procedures
 - 3.6** Recommendations for rectifying defects are made in accordance with workplace procedures
 - 3.7** Mandatory documentation is completed in accordance with workplace procedures
 - 3.8** Tools, equipment and surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with workplace procedures
 - 3.9** Relevant work permits are signed off and electrical equipment (network infrastructure) returned to service in

accordance with workplace procedures

- 3.10** Work records, reports and/or documentation are completed in accordance with workplace procedures

Foundation Skills

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

Range of Conditions

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

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRT99A Test and verify rail traction installations.

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 UETTDRT99 Test and verify rail traction installations

Modification History

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

Performance Evidence

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

- applying 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
- checking rail traction installations for suitability using at least two (2) of the following types of inspection techniques:
 - visual*
 - infra-red camera
 - X-ray
 - camera
 - binoculars/telescope
 - (* must do)
- installing at least one (1) of the following alternating current (a.c.) earthing and multiple earth neutral (MEN) or direct current (d.c.) rail connection system components including:
 - pyramid
 - delta pi
 - enterprise specific type
- using at least three (3) of the following:
 - insulators
 - clamps
 - bolts
 - conductor spacers
 - vibration dampers
 - structural components
- solving rail traction installation problems, including at least one (1) of the following types of rail traction conductors:
 - copper
 - aluminium

- steel
- aluminium/steel reinforced
- working safely in confined spaces and aloft using at least one (1) of the following types of mobile plant and height equipment:
 - elevated work platform (EWP)
 - portable platform
 - gondola
 - hook ladder*
 - elevated work box
 - (*must do)
- obtaining relevant testing and measurement equipment, tools and personal protective equipment (PPE) required for testing and verifying rail traction installations including:
 - using the following types of testing and earth/bond equipment:
 - voltage/ de-energised indicating device
 - earthing conductors
- completing all the following:
 - reporting procedures
 - reporting outcomes.

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:

- legislated regulations, including:
 - legislation and regulations that require installations and equipment to be tested to ensure they are safe
 - the person/bodies responsible for the various aspects of ensuring rail traction installations are safe
 - results of tests that show a rail traction installation is safe for connection to the supply
 - results of periodic inspection and tests that show construction site wiring and equipment is safe to use
 - results of periodic inspection and tests that show the rail traction installations electrical equipment are safe to use
- testing installations, including:
 - rail traction system phasing, phase rotation and polarity is correct and conform to network construction standards
 - electrical rail traction network voltage levels comply with network supply standards
 - potential present upon rail traction network neutral conductors conform network supply standards
 - insulation resistance is adequate
 - earthing system and MEN system components are verified as correctly installed

- documentation, including:
 - results of tests conducted on a rail traction installation in accordance with work requirements to ensure the rail traction installation is safe
 - documents of periodic inspection and testing of rail traction installation and equipment in accordance with requirements
 - non-compliances and defects reported in accordance with established procedures.

Assessment Conditions

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

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

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated 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, facilities, equipment and PPE currently used in industry for testing and verifying rail traction installations
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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