



Australian Government

UETTD RIS41 Install network infrastructure electrical equipment

Release: 1

UETTDNIS41 Install network infrastructure electrical equipment

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 install network infrastructure electrical equipment in the electricity supply industry (ESI).

It includes terminating and/or connecting equipment, conducting relevant pre-commissioning tests involving the equipment/system, and interpreting tests against agreed specifications.

Electrical equipment includes but is not limited to transformers, fuse switches, drop out switches, sectionalisers, links, surge arrestors, gas filled and/or oil filled switches, which are relevant to transmission, distribution and rail networks.

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

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

Pre-requisite Unit

All competencies in the Common Unit Group must have been completed, plus all competencies in one (1) of the identified Pathway Unit Group(s).

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

Transmission Overhead Pathway Group

UETTDNIS54 Install and maintain poles, structures and overhead conductors and cables

UETTDRT26 Install transmission structures and associated hardware

UETTDRT27 Maintain transmission structures and associated hardware

UETTDRT29 Install and maintain transmission overhead conductors and cables

Distribution Overhead Pathway Group

UETTDROP12 Maintain overhead energised low voltage conductors and cables

UETTDNIS52 Install and maintain poles, structures and associated hardware

UETTDNIS54 Install and maintain poles, structures and overhead conductors and cables

UETTDNIS56 Install and maintain low voltage overhead services

Rail Traction Pathway Group

UETTDNIS52 Install and maintain poles, structures and associated hardware

UETTDNIS54 Install and maintain poles, structures and overhead conductors and cables

UETTDRT21 Install traction overhead wiring systems

UETTDRT22 Maintain traction overhead wiring systems

UETTDRT23 Install rail traction bonds

UETTDRT27 Install overhead traction components and equipment

UETTDRT28 Maintain overhead traction components and equipment

Distribution Cable Jointing Pathway Group

UETTDRCJ21 Lay ESI electrical cables

UETTDRCJ26 Install and maintain de-energised low voltage underground polymeric cables

UETTDRCJ27 Install and maintain de-energised high voltage underground polymeric cables

UETTDNIS55 Install and maintain low voltage underground services

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Prepare for installation of network infrastructure electrical equipment

- 1.1** Work schedules, construction plans and drawings, material lists and workplace procedures 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 the installation of electrical equipment (network infrastructure) 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, work health and safety (WHS)/occupational health and safety (OHS) risks assessed and control measures identified in accordance with workplace procedures
- 1.6** Relevant work permits are obtained, understood and signed in accordance with workplace procedures
- 1.7** Plant, equipment, tools and personal protective equipment (PPE) required for work is identified, obtained and confirmed in working order
- 1.8** Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures
- 1.9** Traffic management plan is confirmed as being applied in accordance with workplace procedures

2 Install network infrastructure electrical equipment

- 2.1** WHS/OHS, environmental requirements and workplace procedures are monitored and followed to reduce incidents in the workplace
- 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** Installation of network infrastructure electrical

- equipment is completed in accordance with work schedule, construction plans and drawing and workplace procedures
- 2.4** Unplanned events in the installation of electrical equipment are responded to in accordance with workplace procedures
- 2.5** Quality checks of work are undertaken in accordance with workplace procedures
- 3 Complete installation of network infrastructure electrical equipment**
- 3.1** Completed work is checked/tested against work schedule, construction plans and drawings for compliance and anomalies are reported in accordance with workplace procedures
- 3.2** WHS/OHS and environmental incidents are reported in accordance with workplace procedures, as required
- 3.3** Worksite is rehabilitated, cleaned up and made safe in accordance with workplace procedures
- 3.4** Tools, equipment and surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with workplace procedures
- 3.5** Relevant work permits are signed off in accordance with workplace procedures
- 3.6** 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 UETTDRI41A Install network infrastructure electrical

equipment.

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 UETTDRIS41 Install network infrastructure electrical equipment

Modification History

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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 any three (3) of the following:
 - fuse switches
 - dropout fuses
 - sectionalisers
 - disconnectors
 - links
 - fuses
 - surge arrestors
- installing network infrastructure electrical equipment for at least one (1) of the following switchgear types:
 - reclosers
 - motorised switches
 - gas filled switches
 - ring main units
 - line fault indicators
 - oil filled switches
 - air break switches
- installing network infrastructure electrical equipment for at least one (1) of the following equipment types:
 - transformers
 - reactors
 - regulators
 - capacitors
- using specialist testing equipment including at least three (3) of the following:

- voltage detectors
- phasing equipment
- clip-on ammeters
- insulation resistance testers
- recording meters
- earth resistance tester
- 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:

- relationship between the substations within an overall power system, such as:
 - purpose, location in relation to load centres, layout of high voltage (HV) equipment within the substation and auxiliary equipment
- characteristics of a power transformer, such as:
 - basic construction of distribution transformers, operation under load/no-load conditions, types and basic operation of tap changing switches, including solid state types, efficiency and cooling
- auxiliary equipment used on transformers encompassing:
 - function and basic operation
- maintenance of a power transformer, such as
 - basic connections, restrictions to parallel operation, problems and remedies associated with harmonics, testing and fault-finding procedures
- characteristics of a reactor, including:
 - description and purpose
- types and function of various switchgear, such as:
 - isolators, air-break switches, gas-filled switches, vacuum type, links, fuses, oil disconnectors, fuse switches, circuit breakers, operating characteristics, advantages and disadvantages of different types switchgear, installation procedures, earthing, and requirements and techniques
- types of equipment, such as:
 - transformers, reactors, regulators, capacitors, relays, surge arrestors, fault indicators and mobile generators
- installation procedures for switchgear and equipment, including:
 - standards, codes, legislation, supply authority regulations and/or enterprise requirements
 - assembly and erecting procedures
 - earthing requirements and techniques
 - pole mounted locations
- testing and commissioning, including:
 - electricity supply industry (ESI) standards and procedures.

Assessment Conditions

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

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

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

Evidence should show demonstrated competency working at heights, in limited spaces, with different structural/construction types and method and in a variety of environments.

Resources for assessment must include access to:

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

Links

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