



Australian Government

UETTD RIS68 Solve problems in energy supply network protection equipment and systems

Release: 1

UETTDRI68 Solve problems in energy supply network protection equipment and systems

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 determining correct operation of energy supply network protection equipment and systems and providing solutions as they apply to energy supply network protection. It encompasses working safely, reading circuit and reticulation diagrams, applying logical problem-solving processes from measurements and completing the necessary 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

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

UETTDRI67 Solve problems in energy supply network equipment

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 to solve problems in energy supply network protection equipment and systems

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a given work area are identified, obtained and understood
- 1.2** WHS/OHS risk control measures and procedures in preparation for the work are followed
- 1.3** The likely extent of work to be undertaken is envisaged from reports and/or discussions with appropriate personnel
- 1.4** Advice is sought from the work supervisor to ensure the work is coordinated effectively with others
- 1.5** Sources of materials that may be required for the work are established in accordance with established procedures
- 1.6** Tools, equipment and testing devices needed to take measurements are obtained in accordance with established procedures and checked for correct operation and safety

2 Solve problems in energy supply network protection equipment and systems

- 2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed
- 2.2** The need to test or measure live work is determined in strict accordance with WHS/OHS requirements and, when necessary, conducted within established safety procedures
- 2.3** Circuits/machines/plant are checked as being isolated, where necessary, in strict accordance with WHS/OHS requirements and procedures

- 2.4 Safety hazards resulting from the reports identified and risk control measures devised and implemented in consultation with appropriate personnel
 - 2.5 Problem solving is approached methodically drawing on knowledge of energy supply network protection equipment and systems using measured and calculated values of circuit/apparatus parameters
 - 2.6 Circuit/apparatus/system components are dismantled, where necessary, and parts stored to protect them against loss or damage
 - 2.7 Circuits/components/systems are rechecked and their operational status is confirmed
 - 2.8 Materials/replacement parts required to solve problems are sourced and obtained in accordance with established procedures
 - 2.9 Effectiveness of the repair is tested in accordance with established procedures
 - 2.10 Apparatus is reassembled, finally tested and prepared for return to service
 - 2.11 Unexpected situations are dealt with safely and with the approval of authorised personnel
 - 2.12 Problem-solving activities are carried out without damage to apparatus, circuits the surrounding environment or services using sustainable energy practices
- 3 **Complete and report problem solving in energy supply network protection equipment and systems**
 - 3.1 WHS/OHS work completion risk control measures and procedures are followed
 - 3.2 Reusable, faulty or worn components are tagged and dispatched for repair to maintain adequate spares
 - 3.3 Maintenance work activities are documented in accordance with established procedures

Foundation Skills

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

competency.

Range of Conditions

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 UETTDRI68A Solve problems in energy supply network protection equipment and systems.

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 UETTDRIS68 Solve problems in energy supply network protection equipment and systems

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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
- solving problems in energy supply network equipment including all of the following:
 - determining the operating parameters of existing energy supply protection equipment and systems
 - envisaging the likely extent of work from reports and discussions with appropriate personnel
 - using methodical problem-solving techniques
 - solving problems efficiently
 - altering an existing energy supply protection equipment to comply with specified operating parameters
 - developing energy supply protection equipment to comply with a specified function and operating parameters
 - determining conditions causing an existing energy supply protection equipment to be unsafe
 - completing documentation correctly
- solving problems in energy supply network systems including at least one (1) of the following:
 - distribution overhead system
 - distribution underground system
 - transmission overhead system
 - transmission underground system
- solving problems in energy supply protection equipment and systems including at least two (2) of the following:
 - over-current protection
 - earth fault protection
 - differential protection

- oil and gas devices
- busbar protection
- surge protection
- conventional relays
- electronic relays
- reclosers/sectionalisers
- 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:

- protection fundamentals encompassing:
 - purpose of protection
 - features of a protection scheme
- instrument transformers for protection encompassing:
 - operating principles
 - applications of current transformers
 - applications of voltage transformers
- feeder protection encompassing:
 - fuse protection
 - overcurrent and earth fault
 - sensitive earth fault
 - unit schemes
 - distance protection
 - trip/close sequences for feeders
 - recloser/sectionaliser systems
- transformer protection encompassing:
 - overheating protection
 - overcurrent protection
 - restricted earth fault protection
 - differential protection
 - oil and gas devices
- busbar protection encompassing:
 - types of fault
 - requirements of busbar protection
 - system protection
 - frame-earth protection
- surge protection encompassing:
 - voltage surges

- surge diverters
- arcing horns.

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 personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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