



Australian Government

UETDRSB005 Diagnose and resolve faults in a substation environment

Release: 1

UETDRSB005 Diagnose and resolve faults in a substation environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to diagnose and resolve faults in a substation in the electricity supply industry (ESI).

It includes knowledge of substation types, equipment, components, interpreting alarms and indicators from control and protection systems, and diagnosing faults

It also includes fault conditions and symptoms, isolation procedures, switching diagrams and drawings, and substation materials including hazardous substances.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*
- and*
- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*
- or*
- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

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

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

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

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 diagnose and resolve faults in a substation environment

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
- 1.2** Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
- 1.3** Hazards are identified, risks assessed, and control measures identified and applied
- 1.4** Work is prioritised and sequenced for completion in accordance with work plan and workplace requirement
- 1.5** Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.6** Liaison and communication issues with authorised personnel, authorities and clients are resolved to perform work, as required
- 1.7** Worksite is prepared in accordance with the work plan and workplace requirements

2 Diagnose and resolve faults in a substation environment

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Work permits are received and signed in accordance with workplace requirements
- 2.3** Lifting, working at heights, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
- 2.4** Hazard control measures are monitored in accordance

- with workplace requirements
- 2.5 Faults are diagnosed and resolved in accordance with workplace requirements
 - 2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
 - 2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements
- 3 Complete work and documentation**
- 3.1 Completed work is checked for compliance against the work plan and workplace requirements
 - 3.2 Work permits are signed off in accordance with workplace requirements
 - 3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
 - 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 Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace
 - 3.6 Incidents or unplanned events are reported in accordance with workplace 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 may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSB21 Diagnose and rectify faults in

substation environment.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRSB005 Diagnose and resolve faults in a substation environment

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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 (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
 - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- interpreting alarms and indicators, using existing technology
- diagnosing and resolving faults on at least two (2) of the following:
 - high voltage (HV) circuit breaker control system
 - transformer control system
 - direct current (d.c.) supply system
 - d.c. switchgear and equipment
 - communication equipment
- diagnosing faults using at least three (3) of the following testers:
 - multi meters
 - tong testers
 - insulation resistance/continuity tester
 - low resistance high current tester
 - overload injection tester
 - specialist test equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- evaluation of equipment serviceability
- low voltage (LV) and HV isolation procedures
- interpretation of different system switching diagrams and drawings
- identification and procurement of materials and apparatus
- testing equipment, including:
 - voltage detection devices
 - multi meters
 - tong testers
 - insulation resistance/continuity testers
 - low resistance high current testers
 - overload injection testers
 - specialist testing equipment
 - temperature sensors
- interpretation of alarms and indicators from control and protection systems, and diagnosis of faults in:
 - HV circuit breaker control system
 - power and instrument transformer control system
 - busbars and feeders
 - reactive plant
 - d.c. switchgear and equipment
 - d.c. supply system
 - communication equipment
- fault conditions and symptoms, including:
 - types and typical fault conditions
 - interpretation of mechanical faults
 - interpretation of electrical faults
 - auxiliary systems
 - protection and alarm systems
- substation equipment, components and materials, including:
 - control and protection equipment
 - remote and local operating principles and conventions

- serviceability and control systems
- replacements
- indication of levels, quantities, volumes, pressures and temperatures
- types of materials, including insulation, construction, fabrication and lubrication
- hazardous materials.

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:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

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