



Australian Government

UETDRSB012 Maintain high voltage circuit breakers

Release: 1

UETDRSB012 Maintain high voltage circuit breakers

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 maintain high voltage (HV) circuit breakers in the electricity supply industry (ESI).

It includes types and characteristics of circuit breakers, their operating mechanisms and insulating mediums, and procedures for testing and maintaining each type.

It also includes application, purpose and types of permits and access authorities.

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

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Prepare to maintain HV circuit breakers

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed 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 requirements
- 1.5** Plant, 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 facilitate work, as required
- 1.7** Worksite is prepared in accordance with the work plan and workplace requirements

2 Maintain HV circuit breakers

- 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 plant, tools, equipment and PPE are carried out in accordance with workplace requirements

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| | 2.4 | HV circuit breakers are maintained in accordance with workplace requirements |
| | 2.5 | Quality checks of work are undertaken in accordance with work plan and workplace requirements |
| | 2.6 | Incidents or unplanned events are responded to in accordance with 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 | Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements |
| | 3.5 | Work records, reports and documentation are completed, and where relevant, appropriate personnel notified 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 UETTDRSB24 Maintain high voltage power system circuit breakers.

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 UETDRSB012 Maintain high voltage circuit breakers

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 (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 relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining high voltage (HV) circuit breakers on at least two (2) of the following types:
 - bulk oil
 - minimum oil
 - air blast
 - air insulated
 - vacuum
 - air-insulated switchgear (AIS)
 - gas-insulated switchgear (GIS)
- maintaining at least two (2) of the following types of operating mechanisms:
 - spring
 - solenoid
 - hydraulic
 - pneumatic
- performing at least three (3) of the following tests:
 - insulation resistance
 - contact resistance
 - minimum close and open operations (reduced voltage tests)
 - sequence timing

- contact timing
- vibration
- gas pressure
- performing tests using at least two (2) of the following:
 - pressure measuring devices
 - gas measuring devices
 - oil sampling devices
- performing at least one (1) of the following tests:
 - gas sampling
 - oil sampling.

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:

- 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
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- gas systems
- specialised tools, including:
 - types, construction and function
 - calibration
 - care and maintenance
- low voltage (LV) switching principles, including:
 - use of manuals, and electrical and mechanical diagrams
 - types, characteristics and capabilities of electrical apparatus
 - source of back-feed
- HV switching principles, including:
 - use of manuals, and electrical and mechanical diagrams
 - types, characteristics and capabilities of electrical apparatus
 - identification of components and associated control housings
 - control equipment and auxiliary relays, flags and alarms

- remote and local operating principles and conventions
- maintenance safety switches and interlocks
- procedures for maintaining different types of HV circuit breakers, including:
 - circuit breaker operating principles
 - interrupter chambers
 - interpretation of faults
 - fault conditions and symptoms
 - protection systems
- procedures for maintaining different types of operating mechanisms, including:
 - capabilities
 - interpretation of faults
 - performing different types of maintenance tests.

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.

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