



Australian Government

UETTDRDP14 Maintain energised HV distribution overhead electrical apparatus (glove)

Release: 1

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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 maintain energised high voltage (HV) overhead electrical apparatus (glove) in the electricity supply industry (ESI).

It includes maintaining electrical apparatus using HV live line glove and barrier methods and verifying site conditions and potential hazards, confirming and calculating physical loads and the selection of appropriate and authorised work methods. It also includes preparing and cleaning specialist materials and tools in accordance with authorised technical instructions; undertaking legislative and safe working practices; rendering inoperative automatic re-closing devices, including restoration in accordance with work plans; and issuing/accepting electrical access permits and/or relevant working documents.

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 one (1) of the identified Pathway Unit Group(s) must have been completed.

Pathway 1

Qualified and authorised Distribution Lineworker

Pathway 2

BSBLDR403 Lead team effectiveness

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

UETTDROP11 Inspect overhead poles-structures and electrical apparatus

UETTDROP12 Maintain overhead energised low voltage conductors and cables

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 Maintain network infrastructure electrical equipment

UETTDRI52 Install and maintain poles, structures and associated hardware

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

UETTDRI65 Contribute to coordinated HV live working

Competency Field

Distribution

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 Plan to maintain energised HV distribution overhead electrical apparatus (glove and barrier)

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|------------|--|
| 1.1 | Works schedules, construction plans, drawings, workplace procedures and material lists are obtained and analysed |
| 1.2 | Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures |
| 1.3 | Risk control measures are identified, prioritised and evaluated against the work schedule |
| 1.4 | Job requirements and workplace procedures are identified and communicated with relevant personnel |

- 1.5 Hazards are identified, work health and safety (WHS)/occupational health and safety (OHS) risks assessed and control measures prioritised, implemented and monitored in accordance with workplace procedures
 - 1.6 Relevant work permits are obtained and signed in accordance with workplace procedures
 - 1.7 Equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
 - 1.8 Clients/customers are provided with solutions within scope of specifications, costings and job requirements
 - 1.9 Liaison and communication issues with authorised personnel, authorities, clients and land owners are resolved to perform work, as required
 - 1.10 Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures
 - 1.11 Personnel participating in work are fully briefed and responsibilities confirmed in accordance with workplace procedures
 - 1.12 Traffic management is planned and implemented in accordance with workplace procedures
- 2 Carry out maintenance of energised HV distribution overhead electrical apparatus (glove and barrier)**
- 2.1 WHS/OHS, sustainable energy and environmental principles and practices are monitored and actioned to reduce incidents of accidents in accordance with workplace procedures
 - 2.2 Emergency response procedures are performed in accordance with job requirements and/or workplace procedures
 - 2.3 Requirements for lifting, climbing, working at heights, confined spaces and use of power tools/equipment are followed in accordance with workplace procedures
 - 2.4 Auto-reclose devices and associated circuits are rendered inoperative and necessary work documentation obtained in accordance with workplace procedures
 - 2.5 Hazard warnings and safety signs are recognised and

- hazards and assessed WHS/OHS risks are reported to immediate authorised personnel for directions in accordance with workplace procedures
- 2.6 Remedial actions are taken to overcome shortfalls encountered in the work schedule in accordance with job requirements and workplace procedures
 - 2.7 Maintenance of energised HV distribution overhead electrical apparatus is performed in accordance with works schedules, job requirements and workplace procedures
 - 2.8 Energised HV distribution overhead electrical apparatus is safely maintained to ensure completion in agreed timeframes, to quality standards and with minimum waste in accordance with workplace procedures
 - 2.9 Solutions to non-routine problems are identified and actioned in accordance with workplace procedures
 - 2.10 Quality checks of work are undertaken in accordance with industry standards and workplace procedures
- 3 Complete the maintenance of energised HV distribution overhead electrical apparatus (glove and barrier)**
- 3.1 Completed work is checked 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 cleaned and confirmed safe in accordance with workplace procedures
 - 3.4 Tools, equipment, 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 and energised HV apparatus is returned to service 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 UETTDRDP14A Maintain energised HV distribution overhead electrical apparatus (glove).

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 UETTDRDP14 Maintain energised HV distribution overhead electrical apparatus (glove)

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
- performing all of the following:
 - installing/replacing structures
 - installing/replacing hardware (e.g. cross-arm and insulator)
 - repairing conductors
 - installing/replacing/connecting bridge/bonding connections
- performing at least two (2) of the following:
 - installing/replacing pole mounted reclosers
 - installing/repairing/replacing air brake switches
 - installing/repairing/replacing high voltage (HV) links/disconnects
 - installing/removing temporary HV links/HV fuses
 - installing/repairing/replacing expulsion drop-out fuses
 - installing/replacing lightning arrestors
 - installing/replacing vibration dampers or aircraft warning markers
- performing work from at least two (2) of the following:
 - elevated work platform (EWP)
 - ladder
 - pole platform
 - insulated structured
- using at least one (1) of the following:
 - voltage detector
 - leakage detector
 - insulation test equipment
- 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:

- legislation and regulations, including:
 - legislation, standards and codes
 - supply authority regulations
 - industry guidelines and enterprise requirements
- safety precautions for HV live work associated to glove and barrier, including:
 - minimum approach distances
 - WHS/OHS hazard and precautions
 - assessing and controlling risks
 - personnel protective equipment (PPE)
 - HV live work access
 - auto-reclose function
 - fault current protective devices
 - integrity of insulation
 - specialised equipment and tools
 - inspection of equipment and tools
 - use of specialised equipment and tools
 - work team communication
 - use of safety observers
 - emergency response, first aid and rescue
- policies and procedures for glove and barrier work up to and including 33 kV, including:
 - policies, procedures and practices
 - definition of terms
 - responsibilities of personnel
 - types of structures
 - types of equipment and compliance
- glove and barrier techniques up to and including 33 kV, including:
 - HV insulators
 - HV cross-arms
 - HV bridge connections
 - installation and maintenance of equipment
 - temporary midspan switching devices
 - erection and replacement of poles
 - replacement of conductors and cables
 - HV armour rods and line guards
 - conversion intermediate to strain construction
 - switching devices

- safety precautions for plant, equipment and tools, including:
 - safe working clearances
 - identification of WHS/OHS hazards
 - assessing and controlling risks and hazards
 - PPE
- identification and serviceability of plant, equipment and tools, including:
 - identification of plant, equipment and tools
 - serviceability of plant equipment and tools
- operational use of plant, equipment and tools, including:
 - conductor supports
 - selecting conductor support method
 - calculation of loads
 - effects of secondary loading
 - effects of resultant forces
 - conductor support rigging procedures
 - displacement of conductors utilising rigging equipment
- electrical and electrostatic principles, including:
 - relationship with current, voltage and resistance as related to distribution lines
 - phase voltage and respective line voltages
 - production of an electric field
- HV insulation including:
 - construction of disc insulators
 - construction of a polymeric insulator
 - checking integrity of insulation prior to work commencement
 - effects of electrical fields on disc insulators
 - number of disc insulators needed
 - performance of a failed disc insulator on the line and system
 - minimum number of discs per string
 - detecting failed disc insulators
- effects of electrostatic induction on the human body, including:
 - electrostatic induction and the human body
 - application of a Faraday cage
- switching surges and magnetic fields, including:
 - lightning and switching surges
 - magnetic fields
- HV switching fundamentals including:
 - standards, codes, legislation, supply authority regulations, industry guidelines and enterprise requirements
 - manuals system diagrams/plans and drawings
 - HV live work access authority/permit system - operational forms - HV switching or

- outage requests
- fault current protection devices - main and backup devices, components, types, categories, applications, functions, principle of operation, coordination, zoning, auto-reclosing suppression, paralleling and separating, and ring versus radial feeders
- disabling auto-reclose function
- network interconnectors
- test instruments
- types and categories of switchgear - application, function and operating capabilities; and restrictions
- operating switching apparatus - identifying hazards, assessing risks, systematic and defensive techniques, mobile radio and double insulation
- HV electrical faults - types, causes and effects
- HV single wire earth return (SWER) system, including:
 - components
 - circuit arrangement
 - operation principles
 - faulty SWER earth system
 - SWER substations
- safety observer principles, including:
 - duties
 - techniques
 - minimum approach distances (MAD)
 - minimum safe working distance from vegetation
- feeder automation system, including:
 - function
 - main components
 - field devices
 - supervisory control and data acquisition (SCADA) systems, interlocks and operation
- SCADA systems, including:
 - function and main components
 - security interlocks and access restrictions
 - switching apparatus and retrieving data operation
 - field devices operation
- teamwork HV live work.

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, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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