



Australian Government

UETTDRDP13 Maintain energised HV distribution overhead electrical apparatus (stick)

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) distribution overhead electrical apparatus using the stick method in the electricity supply industry (ESI).

It includes maintaining electrical apparatus using HV live line sticks, verifying site conditions and potential hazards, confirming and calculating physical loads and selecting appropriate authorised work methods.

It also includes preparing and cleaning specialist material and tools in accordance with authorised technical instructions; undertaking legislative and safe working practices; rendering inoperative automatic re-closing devices, including its restoration in accordance with the work plan; 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
 UETTDROP42 Maintain network infrastructure electrical equipment
 UETTDROP52 Install and maintain poles, structures and associated hardware
 UETTDROP54 Install and maintain poles, structures and overhead conductors and cables
 UETTDROP65 Contribute to coordinated HV live working

Competency Field

Distribution

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 Plan to maintain energised HV distribution overhead electrical apparatus (stick)	1.1	Work 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	Job requirements and workplace procedures are identified and communicated with relevant personnel
	1.4	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

- 1.5 Relevant work permits are obtained and signed in accordance with workplace procedures
- 1.6 Equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
- 1.7 Liaison and communication issues with authorised personnel, authorities, clients and land owners are resolved to perform work, as required
- 1.8 Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with workplace procedures
- 1.9 Personnel participating in work are fully briefed and responsibilities confirmed in accordance with workplace procedures
- 1.10 Traffic management plan is confirmed as being applied in accordance with workplace procedures

2 Carry out maintenance of energised HV distribution overhead electrical apparatus (stick)

- 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 overhead electrical apparatus is performed in accordance with works schedules, job requirements and workplace procedures
 - 2.8 Energised HV overhead electrical apparatus are safely installed and maintained in agreed timeframes, to quality standards and with minimum waste in accordance with workplace procedures
 - 2.9 Solutions to unplanned events/problems are identified and actioned in accordance with workplace procedures and approval of authorised personnel
 - 2.10 Quality checks of work are undertaken in accordance with industry standards and workplace procedures
- 3 **Complete maintenance of energised HV distribution overhead electrical apparatus (stick)**
 - 3.1 Completed work is checked against works 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 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 UETTDRDP13A Maintain energised HV distribution overhead electrical apparatus (stick).

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 UETTDRDP13 Maintain energised HV distribution overhead electrical apparatus (stick)

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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
- completing all of the following:
 - installing/replacing structures
 - installing/replacing hardware (e.g. cross-arm and insulator)
 - repairing conductors
 - installing/replacing/connecting bridge/bonding connections
- completing 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
 - washing insulators
 - installing/repairing/replacing expulsion drop-out fuses
 - installing/replacing lightning arrestors
 - installing/replacing vibration dampers or aircraft warning markers
- using at least two (2) of the following access equipment:
 - elevated work platform (EWP)
 - ladder
 - pole platform
 - insulated structure
- using at least one (1) of the following testing and recording devices:
 - 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 up to and including 132 kV (poles) utilising live HV stick method, including:
 - minimum approach distances
 - WHS/OHS hazard and precautions
 - assessing and controlling risks
 - effects of excessive conductor temperature on insulating equipment
 - personnel protective equipment (PPE)
 - integrity of insulation
 - emergency response, first aid and rescue
- policies and procedures for live HV stick method up to and including 132 kV, including:
 - policies, procedures and practices
 - definition of terms
 - responsibilities of personnel
 - types of structures
 - types of equipment and compliance
- stick techniques up to and including 132 kV, including:
 - HV insulators
 - HV crossarms
 - 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
- 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 insulators
 - checking integrity of insulation prior to work commencement
 - effects of electrical fields on insulators
 - number of disc insulators needed
 - performance of a failed insulator on the line and system
 - minimum number of discs per string
 - detecting failed insulators
- electrostatic induction on the human body, including effects
- switching surges and magnetic fields, including:
 - lightning and switching surges
 - magnetic fields
- HV switching fundamentals, including:
 - manuals system diagrams/plans and drawings
 - HV live work access authority/permit system
 - fault current protection devices
 - disabling auto-reclose function
 - network interconnectors
 - test instruments
 - types of switchgear
 - HV electrical faults
 - types
 - causes
 - effects
- HV single wire earth return (SWER) system, including:
 - components

- circuit arrangement
- operation principles
- faulty SWER earth system
- safety observer principles, including:
 - duties
 - techniques
 - minimum approach distances (MAD)
 - minimum safe working distance from vegetation
- 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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