



Australian Government

UETTD RTP33 Maintain energised transmission lines using bare hand technique on a helicopter platform

Release: 1

UETTD RTP33 Maintain energised transmission lines using bare hand technique on a helicopter platform

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 the maintenance of energised high voltage (HV) transmission overhead electrical apparatus, i.e. live line work using bare hand techniques from a helicopter platform. It includes the verification of site conditions and potential hazards, the conformation and calculation of physical loads and the selection of appropriate and authorised work methods. It includes the preparation and cleaning of specialist material and tools in accordance with authorised technical instructions.

It also encompasses the undertaking of work health and safety (WHS)/occupational health and safety (OHS) and safe working practices and the rendering inoperative of the automatic re-closing device, including its restoration in accordance with the work plan and the procedure of issuing/accepting electrical access permits and/or relevant work document.

The application of the skills and knowledge described in this unit may require 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

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

Pathway 1

Qualified and authorised Transmission 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

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

UETTD RIS54 Install and maintain poles, structures and overhead conductors and cables

UETTD RIS65 Contribute to coordinated HV live working

UETTD RTP26 Install transmission structures and associated hardware

UETTD RTP27 Maintain transmission structures and associated hardware

UETTD RTP29 Install and maintain transmission overhead conductors and cables

UETTD RTP30 Inspect transmission overhead structures and electrical apparatus

UETTD RTP31 Maintain energised transmission lines using high voltage live work stick method

UETTD RTP32 Maintain energised transmission lines using high voltage live work bare hand method

UETTD RTP99 Test and verify transmission overhead installations

Competency Field

Transmission

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare/plan to maintain energised lines (transmission) using bare hand technique from a helicopter platform

PERFORMANCE CRITERIA

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

- | | |
|------------|--|
| 1.1 | Work schedules, including drawings, plans, requirements, established procedures and material lists, are obtained and analysed, as necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination |
| 1.2 | Work is prioritised and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes, to a |

quality standard and in accordance with established procedures

- 1.3** Risk control measures are identified, prioritised and evaluated against the work method
- 1.4** Relevant requirements and established procedures for the work are communicated to all personnel and identified for all worksites
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures prioritised, implemented and monitored, including emergency exits kept clear, to ensure safe systems of work are followed and according to established procedures
- 1.6** Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures
- 1.7** Resources, including personnel, equipment, tools and personal protective equipment (PPE), required for the job are identified, scheduled and coordinated and confirmed safe and in technical working order
- 1.8** Relevant personnel at worksite are confirmed current in first aid, cardiopulmonary resuscitation (CPR) and other rescue procedures according to requirements
- 1.9** Liaison and communication issues with others/authorised personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work
- 1.10** Site is prepared according to the work schedule and to minimise risk and damage to property, commerce and individuals in accordance with established procedures
- 1.11** Personnel participating in the work, including plant operators and contractors, are fully briefed and instructed in respective responsibilities coordinated and authorised, where applicable, in accordance with established procedures
- 1.12** Positioning of road signs, barriers and warning devices is planned and coordinated in accordance with requirements

2 Carry out the maintenance of energised

- 2.1** WHS/OHS and sustainable energy principles and practices to reduce the incidents of accidents and

lines (transmission) using bare hand technique from a helicopter platform	minimise waste are monitored and actioned in accordance with requirements and/or established procedures
	2.2 First aid, CPR, other rescue procedures and related work procedures are performed according to requirements and/or established procedures
	2.3 Lifting and tools/equipment, techniques and practices are safely exercised according to requirements
	2.4 Hazard warnings and safety signs are recognised and hazards and assessed WHS/OHS risks are reported to immediate authorised personnel for directions according to established procedures
	2.5 Remedial actions are taken to overcome any shortfalls encountered in the work schedule according to requirements and/or established procedures
	2.6 Maintenance of energised high voltage (HV) overhead electrical transmission apparatus is carried out in accordance with the work schedule and requirements and/or established procedures
	2.7 Essential knowledge and associated skills are applied in the safe maintenance of energised HV overhead electrical transmission apparatus to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements
	2.8 Solutions to non-routine problems are identified and actioned using acquired essential knowledge and associated skills according to requirements
	2.9 Ongoing checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality outcome is achieved for the client/customer and to a community/industry standard
3 Complete the maintenance of energised lines (transmission) using bare hand technique from a helicopter platform	3.1 Work is checked against schedule for conformance and anomalies reported in accordance with established procedures
	3.2 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures

- 3.3 Worksite is rehabilitated, cleaned up and confirmed safe in accordance with established procedures
- 3.4 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures
- 3.5 Relevant work permits (live line) are signed off and client/customer advised in accordance with requirements
- 3.6 Works completion records, reports, as installed//modified drawings and/or documentation and information are confirmed, processed and appropriate personnel notified

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 UETTD RTP33A Maintain energised transmission lines using Barehand technique on a helicopter platform.

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 UETTD RTP33 Maintain energised transmission lines using bare hand technique on a helicopter platform

Modification History

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

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
- working safely from a helicopter platform including all of the following:
 - usage of a helicopter
 - usage of a platform
- performing at least one (1) of the following:
 - replacing/connecting bridge/bonding connections
 - replacing vibration damper
 - repairing/replacing conductor spacers
 - repairing/replacing conductor joint
 - repairing conductor
 - applying helical splice
- 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:

- working on energised lines at or above 132 kV using live line bare hand techniques from a helicopter platform encompassing:
 - Commonwealth/state/territory legislation, standards, codes, supply and aviation authority regulations and/or enterprise requirements associated with extra high voltage (EHV) live line bare hand work from a helicopter platform
 - safety precautions when working on helicopters - live line minimum approach distances, including safe approach for selected helicopter type(s); WHS/OHS hazards and precautions; determination of helicopter platform for task and working environment (i.e.

network and relevant aircraft authority); identification of WHS/OHS hazards; assessing and controlling risks; types, selection, maintenance, storage and uses of personnel protective equipment (PPE); live line access authority/permit systems; disabling auto-reclosing function; ensuring functioning of fault current protective devices; checking integrity of insulation prior to work commencement; types and function of specialised live working equipment and tools; safe working policies, procedures and practices when using/operating specialised equipment and tools; methods of using specialised equipment and tools; work team communication; use of safety observers; pilot briefing requirements; emergency response and rescue, including first aid; techniques for working bare hand on live line EHV from a helicopter platform; aircraft operations induction, including flight plan clearances, systems, equipment and communication requirements; types and functions of aerial attachment equipment, including appropriate testing, rating and certification

- aircrew familiarisation with live-line systems operations and equipment requirements
- principles of high voltage (HV) encompassing:
 - Commonwealth/state/territory legislation, standards, codes, supply authority regulations and/or enterprise requirements associated with working on or near HV
 - electrical and electrostatic principles related to HV lines - relationship of current, voltage and resistance as related to transmission lines; and relationship of phase voltage and respective line voltages
 - production of an electric field – units, effect of distance, potential of an object within the field and the effect of distances to the potential
 - HV insulators - construction of a disc insulator, construction of a polymeric insulator, effects of an electrical field on disc insulators, identification of the number of disc insulators needed for a single line voltage, performance of a failed disc insulator on the line and the system, determining the minimum allowable number of discs per string for each line voltage in the system before bare hand work is to proceed, techniques in detecting a failed disc in a string, techniques in using appropriate tools and equipment to test a string, and methods of recording data
 - effects of electrostatic induction on the human body - relationship of the resistance of a human body to different levels of current and voltage, relationship of a human body to an electric field, and effects of electrostatic induction on bare hand work
 - application of Faraday's cage - effects of a body, advantages, description of the Faraday's cage used by bare hand live-line workers
 - safety precautions working on or near HV electrical apparatus - safe approach distances (SAD) from live line; identification of WHS/OHS hazards; assessing and controlling risks; types, selection, maintenance, storage and uses of PPE; permit to work systems and isolation procedures; types and function of specialised live working equipment; safe working policies, procedures and practices when using and operating specialised equipment; methods of using specialised equipment; and emergency response and rescue, including first aid
 - effects of lighting and switching surges on performance of string insulators - health effects to workers, and methods used to alleviate surges on transmission lines
 - magnetic field - difference between magnetic fields and electrostatic fields; source of magnetic field; techniques in locating, measuring and analysing known sources of magnetic fields; reasons for monitoring magnetic field exposure and techniques used to

monitor magnetic fields

- powerline safety practices encompassing:
 - protective apparatus and apparel for linework - responsibilities for the selection, use, maintenance and storage of protective apparatus and apparel and the types of protective apparatus and apparel used for the line worker
 - requirements for the use of ladders - carrying, erecting, collapsing and lowering different types of extension ladder against a standing pole; maintenance checks on different types of ladders; renewal of extension ropes and the safety issues relating to clearances from overhead conductors
 - requirements for climbing and working aloft - methods used to identify a pole is safe to climb; methods used to inspect a line worker's body belt; application of knots and hitches appropriate to the requirements of a line worker; height safety principles, including personal fall protection, prevention and related requirements; and the practical procedures of climbing an overhead structure and fitting a pole chair
 - traffic management - purpose of traffic management and a line worker's responsibilities in accordance with relevant statutory requirements and electricity supply industry (ESI) requirements, demonstration of the procedure used to provide an effective traffic management scheme and the use of a two-way radio
 - control of small fires - identification, selection and operation of the appropriate extinguishing mediums for various types of fires; general fire prevention methods and the precautions for personal protection when fighting small fires
 - rescue victims from heights and confined spaces - planning and identifying procedures; establishing responses; developing techniques; involvement of external emergency services; and practical demonstration/rehearsals of rescuing a person from heights and from confined spaces and emergency procedures for the rescue of an electric shock victim, including cardiopulmonary resuscitation (CPR)
 - requirements for aerial linework - planning, establishing and implementing relevant aviation authority clearances; determining system requirements; aircrew familiarisation with network operations and equipment; and requirements for effective communications operations for aerial 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.

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>