



Australian Government

Department of Education, Employment and Workplace Relations

UETDRRT11B Maintain energised direct current traction overhead wiring system

Release: 1

UETDRRT11B Maintain energised direct current traction overhead wiring system

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

1)

1.1) Descriptor

This Competency Standard Unit covers the maintenance and repair of energised DC traction Overhead Wiring system through the use of insulated ladder and working bare hand or insulated stick and includes the verification of the site conditions and the potential hazards, the conformance with and calculation of mechanical loads, the selection of appropriate tools and equipment, and authorised work method. It includes the undertaking of OHS and safe working practices to ensure that correct procedures and precautions to working live in accordance with the work plan and enterprise requirements are followed. It also includes; the visual inspection and necessary checks to confirm that overhead wiring components and associated hardware are in a safe condition to test and/or return to service, the re-commissioning tests of the components and associated hardware and the updating of system data/maintenance records.

Application of the Unit

Application of the Unit 4)

This Competency Standard Unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit may require a licence/registration to practice in the work place subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to Occupational Health and Safety, electricity/telecommunications/gas/water industry safety and compliance, industrial relations, environmental protection, anti discrimination and training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of operating certain equipment.

Pre-Requisites

Prerequisite Unit(s) 2)

2.1) Competencies

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:.

BSBWOR402A	Promote team effectiveness
UETTDNIS25B	Contribute to coordinated HV live line work
UETTDNRT06B	Maintain overhead traction configuration
UETTDNRT09B	Operate road rail traction height access equipment

For the full prerequisite chain details for this unit please refer to Table 3 in Volume 1, Part 2

Employability Skills Information

Employability Skills	<p>3)</p> <p>The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.</p>
-----------------------------	--

Elements and Performance Criteria Pre-Content

6) Elements: Elements describe the essential outcomes of a competency standard unit	<p>Performance Criteria describe the required performance needed to demonstrate achievement of the element.</p> <p>Assessment of performance is to be consistent with the evidence guide.</p>
--	---

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare/plan to maintain energised DC traction overhead wiring systems	<p>1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are obtained, analysed, if necessary, by site inspection and the extent of the preparation of the work determined for planning and coordination.</p> <p>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.</p> <p>1.3 Risk control measures are identified, prioritised and evaluated against the work schedule.</p> <p>1.4 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.</p>

ELEMENT**PERFORMANCE CRITERIA**

- 1.5 Hazards are identified, OHS risks assessed and control measures are 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 authority/instructions 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 required for the job are identified, scheduled and coordinated and confirmed in a safe and technical working order.
- 1.8 Clients/Customers are provided with possible solutions and/or options within the scope, acceptable cost and requirements.
- 1.9 Liaison and communication issues with other/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 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.

ELEMENT	PERFORMANCE CRITERIA
2 Carry out maintenance of energised DC traction overhead wiring systems	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimise waste are monitored and actioned in accordance with requirements and/or established procedures.
	2.2 First Aid, Rescue and other related work procedures are performed according to requirements and/or established procedures.
	2.3 Lifting, climbing, working aloft, and use of tools/equipment, techniques and practices are safely exercised according to requirements.
	2.4 Hazard warnings and safety signs are recognised and hazards and assessed OHS risks are reported to the immediate authorised persons 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 direct current traction overhead wiring systems 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 direct current traction overhead wiring systems 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 On going checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality like outcome is achieved for the client/customer and to a community/industry

ELEMENT	PERFORMANCE CRITERIA
3 Complete the maintenance of energised DC traction overhead wiring systems	<p data-bbox="715 302 829 331">standard.</p> <p data-bbox="555 369 1324 515">3.1 Work undertaken is checked against works schedule for conformance with requirements, anomalies reported and solutions identified in accordance with established procedures.</p> <p data-bbox="555 548 1324 660">3.2 Accidents and/or injuries are reported and followed up in accordance with requirements/established procedures.</p> <p data-bbox="555 694 1324 806">3.3 Work site is rehabilitated, cleaned up and confirmed safe in accordance with established procedures.</p> <p data-bbox="555 840 1324 974">3.4 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures.</p> <p data-bbox="555 1008 1324 1120">3.5 Relevant work Authority/Instruction(s) are signed off or returned to client/customer in accordance with requirements.</p> <p data-bbox="555 1153 1324 1292">3.6 Works completion records, reports, as installed /modified drawing(s) and/or documentation and information are confirmed, processed and appropriate personnel notified.</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) Essential Knowledge and Associated Skills (EKAS): This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of maintaining energised direct current traction overhead wiring systems.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

T2.1.4. Basic rigging techniques

REQUIRED SKILLS AND KNOWLEDGE

- T2.2.4 Powerline distribution installation.
- T2.2.5 Powerline installation safety
- T2.2.13 Low voltage - energised working practices for substations
- T2.3.1 Powerline safety practices
- T2.4.2 Low voltage switching principles
- T2.6.8 DC traction - energised working practices
- T2.8.1 Enterprises specific - policies and procedure instructions
- T2.8.2 Enterprises specific - OHS instructions
- T2.8.3 Enterprises specific - technical drawing and documents

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the range statement of the competency standard unit and the Training Package Assessment Guidelines. The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all component parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment. Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

EVIDENCE GUIDE

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines - UET09". Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range; and
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and range; and
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment; and
 - Demonstrate an appropriate level of employability skills; and
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures; and
- Demonstrated performance across a representative range of contexts from the prescribed items below:

Range of tools/equipment/materials/procedures/workplaces/other variables		
Group No	The minimum number of items on which skill is to be demonstrated	Item List
A	At least two of	Span, cross-span,

EVIDENCE GUIDE

	the following:	headspan, section insulator, support equipment, tramway support network
B	At least three of the following;	Catenary, dropper, contact/trolley, feeder/ in-span feeder, drape/potential jumper
C	At least two of the following:	Removal of trapped foreign objects Profiling Vertical adjustment of contact or trolley wire
D	At least one of the following;	Insulated elevating work vehicles Insulated ladder Insulated work platforms
E	At least two of the following:	Tensioning equipment Insulated sticks Ropes Slings and chains Geometry profiling equipment.
F	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

EVIDENCE GUIDE

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual maintenance of energised DC traction overhead wiring systems

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency working at realistic heights above ground i.e. above 3 metres, in limited spaces, with different structural/construction types and method and in a variety of environments.

Method of assessment

9.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 "Assessment Guidelines".

Note:

Competent performance with inherent safe working practices is expected in the Transmission, Distribution and Rail Traction Industry. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

8) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall/may be demonstrated in relation to the maintenance and repair of energised direct current traction overhead wiring systems, working bare handed on insulated ladders or insulated work platforms, or using insulated sticks.

The work may include installing, maintaining, repairing or replacing droppers, in-span feeders, catenary wire, contact/trolley wire, feeder wire, drape/potential jumper wire, cross-span, networks and head span wire, section insulators and components.

Work may also include removing foreign objects trapped on overhead wiring system. Profiling encompasses sag, tension, encumbrances, offsets, cants and registration this involves horizontal and vertical adjustment of the contact wire or trolley wire to a design height and stagger in reference to the running rail.

Materials and equipment may include porcelain, glass, ceramic, fibre glass and composite insulators, steel, brass, stainless steel, neoprene, copper, cast and galvanized fittings, drums, pulleys, hooks, yoke plate, line grips, ropes, slings, hydraulic/manual crimping and cutting tools, specialized tools and dynamometers.

Types of traction components may include droppers, bay components, steady spans hardware, steady spans, pull-off, section insulators, neutral sections, tramway frogs, pendulums, crossing pans and ears/hangers, troughing, 15 - 90° crossings, in-span feeders, isolation switches knuckles (insulated and non-insulated), and cross arms.

The following constants and variables included in the element/Performance Criteria in this unit are fully described in the Definitions Section 1 of this volume and form an integral part of the Range Statement of this unit:

- Appropriate and relevant persons (see Personnel)
- Appropriate authorities
- Appropriate work platform
- Assessing risk
- Assessment
- Authorisation
- Confined space
- Diagnostic, testing and restoration
- Documenting detail work events, record keeping and or storage of information
- Drawings and specifications
- Emergency
- Environmental and sustainable energy procedures

RANGE STATEMENT

- Environmental legislation
- Environmental management documentation
- Established procedures
- Fall prevention
- Hazards
- Identifying hazards
- Inspect
- Legislation
- MSDS
- Notification
- OHS practices
- OHS issues
- Permits and/or permits to work
- Personnel
- Quality assurance systems
- Requirements
- Testing procedures
- Work clearance systems

Unit Sector(s)

Not Applicable

Custom Content Section

2.2) Literacy and numeracy skills

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 "Literacy and Numeracy"

Reading	4	Writing	4	Numeracy	4
---------	---	---------	---	----------	---

Competency Field

Competency Field 5)

Rail Traction Units

