Australian Government

UETTDREL19A Identify and interpret characteristics of electrical apparatus associated with power industry assets

Release: 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UETTDREL19A Identify and interpret characteristics of electrical apparatus associated with power industry assets

Modification History

Release	Action	Core/Elective	Details	Points
2	Edit	N/A	Corrected "Evidence shall show that knowledge has been acquired of" statement on Required Skills and Knowledge	

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This Competency Standard Unit shall be demonstrated in relation to the identification and interpretation of electrical apparatus associated with asset inspection, including interpreting the operational characteristics of the electrical apparatus, pole top structures, attachments and the relationship of the various equipment, including the association the equipment has in the correct functioning of the distribution and/or transmission system

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the Unit **2)**

This competency standards unit would be applied by asset inspectors engaged in the regular and methodical inspection and treatment poles and inspection of electrical apparatus in the transmission and distribution industry sector

Licensing/Regulatory Information

License to practice **3)**

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) **4)**

Competencies **4.1)**

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

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed.

Common Unit Group

Unit Code	Unit Title
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UETTDREL13A	Comply with sustainability, environmental and incidental response policies and procedures
UETTDREL14A	Working safe near live electrical apparatus as a non-electrical worker

Literacy and numeracy skills **4.2)**

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 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills **5)**

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.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to identify and interpret characteristics of electrical apparatus associated with power industry assets.	1.1 Instructions for identifying the electrical apparatus undergoing asset inspection are communicated and confirmed to ensure clear understanding.
	1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites.

ELEMENT	PERFORMANCE CRITERIA
	1.3 OHS policies and procedures related to requirements and established procedures for the visual checking and treatment of poles and structures, and the inspection of overhead structures and electrical apparatus used on the poles are obtained and confirmed.
	1.4 Work is prioritised and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures.
	1.5 Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored according to established procedures.
	1.6 Relevant work permits are obtained, where necessary, to access and perform work according to requirements and/or established procedures.
	1.7 Schedule(s) for identifying poles and structures, and the inspection of overhead structures and electrical apparatus including practices for working safely are confirmed in accordance with instructions and requirements.
	1.8 Resources including personnel, equipment, tools and personal protective equipment required for the job are obtained and confirmed in working order.
	1.9 Relevant person responsible for First Aid and / or related work safety procedures at the worksite are confirmed in accordance with established procedures to ensure safety measures are followed in the instance of an incident.
	1.10 Liaison and communication issues with appropriate personnel, authorities, clients and land owners are resolved to carry out work where necessary.
	1.11 Site is prepared according to the work schedule and to minimise risk and damage to property, commerce, and individuals in accordance with

ELEMENT	PERFORMANCE CRITERIA	
		established procedures.
	1.12	Personnel participating in the work are fully briefed and respective responsibilities confirmed in accordance with established procedures, where necessary.
	1.13	Traffic management plan is identified and road signs, barriers and warning devices are positioned in accordance with requirements, where necessary.
2 Identify and interpret characteristics of electrical apparatus associated with power industry assets.	2.1	OHS and sustainable energy and environmental principles and practices to reduce the incidents of accidents and minimise waste are monitored and followed in accordance with requirements and established procedures.
	2.2	Tools and equipment are selected appropriate to the task requirements and are used to produce desired outcomes.
	2.3	Schedule for identifying poles and structures, and the inspection of overhead structures and electrical apparatus used on the poles is followed to ensure work is completed in an agreed time, to a quality standard and with a minimum of waste, using appropriate technology.
	2.4	Essential knowledge and associated skills are applied for the safe identification of electrical apparatus to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.5	Hazard warnings and safety signs are recognised, hazards identified and OHS risks reported to immediate appropriate personnel for directions according to established procedures.
	2.6	Operational characteristics of the electrical apparatus and associated equipment are understood, with respect to the primary purpose of the apparatus and associated equipment within the supply system.
	2.7	Visual checks of the electrical apparatus and

ELEMENT	PERFORMANCE CRITERIA	
		associated equipment are performed to identify defective or suspect condition
	2.8	Unplanned events during the identification of electrical apparatus and associated equipment are undertaken within the scope of established procedures.
	2.9	Known solutions to a variety of problems are applied using acquired knowledge and associated skills.
	2.10	On-going checks of quality of the work are undertaken in accordance with instructions and established procedures.
3 Complete the identification and interpretation characteristics of electrical apparatus associated with power industry assets	3.1	Work undertaken is checked against works schedule for conformance with requirements, with anomalies reported in accordance with established procedures.
	3.2	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.
	3.4	Tools and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage according to established procedures.
	3.5	Unsafe or faulty tools are identified and marked for repair in accordance with established procedures before, during and after use.
	3.6	Relevant work permit(s) are signed off and poles and structures are returned to service in accordance with requirements.
	3.7	Works completion records, reports and/or documentation and information are finalised and processed and appropriate personnel notified.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) 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 characteristics of electrical apparatus associated with power industry assets.

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

KS01-TEL19A Characteristics of electrical apparatus associated with power industry assets

Evidence shall show an understanding of characteristics of electrical apparatus associated with power industry assets to an extent indicated by the following aspects:

T1 Electrical apparatus safety requirements encompassing:

- Working safely with machinery and equipment near live electrical apparatus
- Selecting and using appropriate personal safety equipment
- Implementing emergency procedures for the rescue of an electric shock victim
- Providing emergency first aid for an electric shock victim
- Selecting and using Personal Protecting Equipment (PPE)

T2 Inspection of electrical apparatus encompassing:

- Standards, codes, legislation, supply authority regulations and or enterprise requirements
- Visual checking of poles and structures
- Identification of electrical apparatus associated with Power Industry Assets within the electrical distribution system - Single Wire Earth Return (SWER), High Voltage (HV) overhead conductors and cables, Low Voltage (LV) overhead conductors and cables, underground cables (as attached to the poles), overhead transition points and termination hardware, vibration mitigation hardware, insulators, cross arms, cross arm mountings and brackets, switches, HV fuses and fuse carriers, surge diverters, auto-reclose devices, pole mounted transformers and sub stations, possum guards, earth guards, angle of the pole, height of conductors, public lights, bolts and associated pole fixings.
- Operational knowledge of the purpose of electrical apparatus associated with Power Industry Assets within the electrical distribution system - Single Wire Earth Return (SWER), High Voltage (HV) overhead conductors and cables, Low Voltage (LV) overhead conductors and cables, underground cables (as attached to the poles), overhead transition points and termination hardware, vibration mitigation hardware, insulators, cross arms, cross arm mountings and brackets, switches, HV fuses and fuse carriers, surge diverters, auto-reclose devices, pole mounted transformers and sub stations, possum guards, earth guards, angle of the pole, height of conductors, public lights, bolts and associated pole fixings.
- Interpretation of the operational characteristics and purpose of electrical apparatus associated with Power Industry Assets

REQUIRED SKILLS AND KNOWLEDGE

- Documenting inspection findings in accordance with enterprise requirements

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.

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. 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	Confirm operational knowledge associated with the characteristics of electrical apparatus in 8 of the following:	Single Wire Earth Return (SWER) High Voltage (HV) overhead conductors and cables Low Voltage (LV) overhead conductors and cables Underground cables (as attached to the poles) Overhead transition points and termination hardware Vibration mitigation hardware Insulators, cross arms, cross arm mountings and brackets Switches, HV fuses and fuse carriers, surge diverters, auto-reclose devices Pole mounted transformers and sub stations Possum guards, earth guards Angle of the pole Height of conductors Public Lights, bolts and associated pole fixings.
B	Confirm knowledge associated with the characteristics of at	Wood pole Steel pole

	least four of the following:	Concrete pole Composite pole Reinforced Poles
C	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

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 safely undertake actual work near live electrical apparatus

In addition to the resources listed above, in context of and specific resources for assessment, evidence should show demonstrated competency working below ground, 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 Industry to which this Competency Standard Unit applies. 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)

For optimisation of training and assessment effort, competence in this unit is not recommended to be assessed concurrently with any other unit.

Range Statement

RANGE STATEMENT

10) 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.

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

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:

Electrical apparatus may include:	• Single Wire Earth Return (SWER), High Voltage (HV) and Low Voltage (LV) overhead conductors and cables, underground cables (as attached to the poles) and overhead transition points, conductor terminations, insulators, conductor ties, cross arms, cross arm mountings and brackets, switches, HV fuses and fuse carriers, pole mounted transformers, sub stations, air-break switches, surge diverters, auto reclose relays, possum guards, earth guards, angle of the pole, lights, bolts and associated pole fixings.
Work permits may include:	• Safe Approach Distances Zones / Safe Working Clearance, Work Permit(s) and/or Access Authorisation Permits and those required under Technical standards and Industry Guidelines.
Inspection may include:	• On foot or by conventional ground-based vehicle and /or from the air. Aircraft maybe helicopter or fixed wing types.
Tools and equipment may include:	• Power operated tools such as chainsaws, brush cutters, power pruners, powered drills, augers, air compressors, generators, jack hammers, demolition saws, measuring devices, extendable mounted cameras • Excludes machinery and equipment that encompass driving and associated licenses, such as slashers, boom-operated insulated elevating work platforms, excavator, back hoes and the like. • Hand tools such as hacksaws, hammers, screwdrivers, sockets, wrenches, scrapers, chisels, files, tape measures, bolt cutters, knives and other related associated
Visual checks may include:	• The use of un-aided eye, binoculars, X-ray, electronic data capture using infrared and/or digital video camera, computers, sonic testing devices. Items to be identified and interpreted may include overhead poles, structures and / or electrical apparatus, but not towers.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Entry Level – Cross Discipline Units.