Australian Government

UETTDRDP99A Test and verify distribution overhead installations

Release: 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UETTDRDP99A Test and verify distribution overhead installations

Modification History

Release	Action	Core/Elective	Details	Points
2	Edit	N/A	Corrected must do item in Group E of Evidence Guide	

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers inspection and testing to verify whether a distribution Overhead Installation is safe and complies with all requirements. It encompasses working safely, visual inspections and mandatory, optional and functional test procedures, identifying non-compliance defects and mandatory reporting requirements.

Application of the Unit

Application of the Unit **2)**

This unit is intended to augment previously acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit require a license to practice in the workplace subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly

License to practice **3)**

related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the access to High Voltage and Low Voltage distribution network installations, operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting equipment.

2. Compliance may be required in various jurisdictions relating to currency in ESI Rescue Procedures, CPR/First Aid, confined space, lifting and risk safety measures.

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
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE104A	Solve problems in d.c. Circuits
UEENEEE105A	Fix and secure electrotechnology equipment

Prerequisite Unit(s) **4)**

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
UETTDRDP11A	Inspect overhead poles/structures and electrical apparatus
UETTDRDP12A	Maintain overhead energised low voltage conductors and cables
UETTDREL11A	Apply sustainable energy and environmental procedures
UETTDREL12A	Operate plant and equipment near live electrical conductors and apparatus
UETTDREL16A	Working safely near live electrical apparatus
UETTDRIS41A	Install network infrastructure electrical equipment
UETTDRIS42A	Maintain network infrastructure electrical equipment
UETTDRIS52A	Install and maintain poles, structures and associated hardware
UETTDRIS54A	Install and maintain poles, structures, overhead conductors and cables
UETTDRIS56A	Install and maintain low voltage overhead services

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 visually inspect, test and verify overhead distribution installation.	1.1 Works schedule(s), including drawings, plans, requirements, established procedures, and material lists, are received, analysed and confirmed, if necessary, by site inspection.
	1.2 Relevant requirements and established procedures for the work are communicated to all personnel and identified for all work sites
	1.3 OHS policies and procedures related to requirements and established procedures for accessing, testing and verification of overhead distribution installations are obtained and confirmed for the purposes of the work to be performed and communicated.
	1.4 Work is prioritised and sequenced following

ELEMENT	PERFORMANCE CRITERIA
	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 including emergency exits kept clear according to established procedures
	1.6 Relevant work permits are obtained to access and perform work according to requirements and/or established procedures.
	1.7 Resources including personnel, equipment, tools and personal protective equipment required for the job are obtained and confirmed in working order.
	1.8 Relevant personnel at worksite are confirmed current in First Aid, Pole Top Rescue and other related work procedures according to requirements.
	1.9 Liaison and communication issues with other/authorised personnel, authorities, clients and land owners are resolved to carry out work where necessary.
	1.10 Specialist test and measurement equipment for testing and verification of overhead distribution installations are obtained, inspected and confirmed in working order and calibrated as per requirements and established procedures
	1.11 Site is prepared according to the work schedule and to minimise risk and damage to property, commerce, and individuals in accordance with established procedures.
	1.12 Personnel participating in the work, including plant operators and contractors, are fully briefed and respective responsibilities confirmed where applicable in accordance with established procedures
	1.13 Road signs, barriers and warning devices are positioned in accordance with requirements.

ELEMENT	PERFORMANCE CRITERIA
2 Carry out visual inspection, test and verification of overhead distribution installation.	2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimise waste are monitored and followed in accordance with requirements and/or established procedures.
	2.2 Lifting, climbing, working in confined spaces and aloft, use of power tools/equipment, test equipment, test and measurement equipment, techniques and practices are safely followed and, currency according to requirements confirmed.
	2.3 Essential knowledge and associated skills are applied in the inspection, safe access, testing and verification of overhead distribution installations to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements.
	2.4 Overhead distribution installations and associated hardware is visually inspected and confirmed as positioned, secured and terminated/connected in accordance with requirements and established procedures.
	2.5 Energised tests and/or measurements, if required, to verify overhead distribution installations is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.
	2.6 Overhead distribution installations is checked for suitability and conformance with organisational construction standards and electrical network supply standards
	2.7 Overhead distribution installation protection methods and devices are validated as meeting organisational construction and distribution network protection standards.
	2.8 Overhead distribution installation switchgear is validated as being appropriately rated and meeting functional requirements of organisational construction and distribution network protection standards

ELEMENT	PERFORMANCE CRITERIA	
	2.9	Overhead distribution installations earthing system and MEN system components are verified as correctly installed and conforming to organisational construction and distribution network standards.
	2.10	Mandatory tests are conducted to verify that overhead distribution installation:·
		Distribution system phasing, phase rotation and polarity is correct and conform to network construction standards.
		Electrical distribution network voltage levels comply with network supply standards.
		Potential present upon distribution network neutral conductors conform network supply standards.
	2.11	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.
	2.12	Known solutions to a variety of problems are applied using acquired essential knowledge and associated skills.
	2.13	Ongoing checks of quality of the work are undertaken in accordance with instructions and established procedures.
3 Report inspection and test findings.	3.1	OHS risk control work completion measures and procedures are followed.
	3.2	Work undertaken is checked/tested against works schedule for conformance with requirements and anomalies corrected/ reported in accordance with established procedures.
	3.3	Accidents and/or injuries are reported in accordance with requirements/established procedures, where applicable.
	3.4	Work site is rehabilitated, cleaned up and made safe in accordance with established procedures.

ELEMENT	PERFORMANCE CRITERIA
	3.5 Non-compliance defects are identified, corrected and/or reported in accordance with established procedures.
	3.6 Recommendations for rectifying defects are made in accordance with established procedures.
	3.7 Mandatory documentation is completed in accordance with established procedures.
	3.8 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures.
	3.9 Relevant work permit(s) are signed off and, electrical equipment (network infrastructure) are returned to service in accordance with requirements.
	3.10 Works completion records, reports, as installed /modified drawing 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 inspecting overhead structures and electrical apparatus (poles /structures).

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

KS01-TDP99A Test and verify distribution overhead installations

Evidence shall show an understanding of distribution overhead installations testing and verification to an extent indicated by the following aspects:

T1 Legislated regulations encompassing:

- legislation and regulations that require installations and equipment to be tested to ensure they are safe.
- the person/bodies responsible for the various aspects of ensuring distribution overhead installations are safe.
- results of tests that show a distribution overhead installation is safe for connection to the supply.
- results of periodic inspection and tests that show construction site wiring and equipment is safe to use.
- results of periodic inspection and tests that show the distribution overhead installations electrical equipment are safe to use.

T2 Testing installations encompassing:

- Distribution system phasing, phase rotation and polarity is correct and conform to network construction standards.

T3 Documentation encompassing:

- results of tests conducted on a distribution overhead installation in accordance with work package requirements and ensure the distribution overhead installation is safe.
- documents of periodic inspection and testing of distribution overhead installation and equipment in accordance with requirement.
- Non-compliances and defects reported in accordance with established procedures.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit of competency and must be read in conjunction with the performance criteria and the range statement of the unit of competency 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 in accordance with the "Assessment Guidelines – UET12". 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**	**Item List**

	number of items on which skill is to be demonstrated	
A	At least two of the following:	Visual* Infra-red camera X-Ray Camera Binoculars/telescope (* must do)
B	Any one of the following:	Pyramid Delta pi Enterprise specific type
C	At least three of the following	Insulators Clamps Bolts Conductor spacers Vibration dampers Structural components
D	At least one of the following	Copper Aluminium Steel Aluminium/steel reinforced
E	At least two of the following	Elevated work platform* Portable platform Gondola Hook ladder Elevated work box (*must do)
F	All of the following	Voltage/ de-energised indicating device Earthing conductors

G	All of the following	Reporting procedures Reporting outcomes

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.
- Network constructions standards
- Network supply standards
- Suitable work environment, facilities, equipment and materials to undertake actual inspection of overhead structures and electrical apparatus.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency working aloft (upon pole/structure or from EWP), 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)

There are no concurrent assessment recommendations for this unit

Range Statement

RANGE STATEMENT

10) This relates to the unit of competency 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 be demonstrated in relation to the installation, inspection and maintenance of overhead distribution installations and includes

Distribution network installations and associated hardware which may include relevant distribution line/network high voltage overhead; conductors, groundwires, insulators, structural members, structural hardware, vibration dampers, conductor spacers, conductor repair, performed patch rods

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
- Authorisation
- Confined space
- Pre-commissioning testing and measurement
- Documenting detail work events, record keeping and or storage of information
- Drawings and specifications
- Environmental and sustainable energy procedures
- 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

RANGE STATEMENT

- Quality assurance systems
- Network construction standards
- Network supply standards
- Testing procedures
- Work clearance systems

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Distribution