



Australian Government

Department of Education, Employment and Workplace Relations

UETTD RTP24A Erect power systems transmission structure hardware

Release: 1

UETTD RTP24A Erect power systems transmission structure hardware

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Competency Standard Unit covers the erection of hardware and/or associated equipment used on transmission towers. It includes the correct positioning of hardware on the towers in accordance with construction plans and specifications. It also encompasses the inspection and confirmation that the hardware and associated equipment are in accordance with the works order and the identification of potential hazards and safety risks with recommendations for preventative action being referred to appropriate authorities.

Application of the Unit

Application of the Unit 2)

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

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

License to practice**3)**

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
UETTD RTP23A	Erect power systems transmission structures

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 erect transmission tower hardware	1.1	Work instructions are received and confirmed.
		1.2	Relevant requirements and established procedures to be followed for the work to be performed are discussed with all personnel to establish and confirm the work schedule.
		1.3	OHS policies and procedures to be followed for the work to be performed are received and confirmed.
		1.4	Suggestions to assist in meeting the erection of transmission tower hardware outcomes are made to others involved in the work.
		1.5	Hazards are identified, OHS risks assessed and emergency exits kept clear according to given

ELEMENT**PERFORMANCE CRITERIA**

instructions and established procedures.

- 1.6 Scope of responsibility under the relevant work permit are received and confirmed according to requirements and established procedures with relevant personnel.
- 1.7 Resources including, equipment, tools and personnel protective equipment required for the job are obtained and, in working order according to established procedures.
- 1.8 Relevant responsibility associated with First Aid, Tower/Pole Top Rescue and/or other related work safety procedures at the work site are confirmed in accordance with requirements and established procedures to ensure safety measures are followed in the instance of an incident.
- 1.9 Client issues are referred to appropriate personnel in accordance with industry/acceptable /community standards.
- 1.10 Site is prepared according to given instructions and the work schedule for a quality outcome and to minimise risk and damage to property, commerce, and individuals in accordance and established procedures.
- 1.11 Road signs, barriers and warning devices are positioned in accordance with given instructions and requirements.

2 Carry out the erection of transmission tower hardware

- 2.1 OHS and sustainable energy principles and practices to reduce the incidents of accidents and minimise waste are followed in accordance with given instructions, requirements and/or established procedures.
- 2.2 Lifting, climbing, working in confined spaces and/or aloft, and use of power tools/equipment, techniques and practices are safely followed in accordance with given instructions and, according to requirements confirmed to eliminate the prospects of incidents
- 2.3 Operational knowledge for the erection of

ELEMENT**PERFORMANCE CRITERIA**

		transmission tower hardware to be applied to the work is confirmed to ensure completion in an agreed timeframe and, to quality standards with a minimum of waste according to requirements and established procedures.
	2.4	The erection of transmission tower hardware is carried out in accordance with given instructions and established routines/procedures.
	2.5	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.
	2.6	Non-routine events are referred to the immediate authorised personnel for directions according to established procedures.
	2.7	Problems associated with the erection of transmission tower hardware are dealt with using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met.
	2.8	Ongoing checks of quality of the work are undertaken in accordance with given instructions and established procedures.
3	Complete the erection of transmission tower hardware	3.1 Work undertaken is checked against work schedule and anomalies reported to Authorised personnel in accordance with established procedures. 3.2 Accidents and/or incidents are actioned and reported to authorised personnel in accordance with established procedures. 3.3 Work site is rehabilitated, cleaned up and made safe in accordance with given instructions and 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.

ELEMENT**PERFORMANCE CRITERIA**

- 3.5 Appropriate personnel are notified of work completion according to established procedures.
- 3.6 Works completion records, report forms/data sheets are completed accurately in accordance with given instructions and established procedures.

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 erecting transmission tower hardware.

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

KS01-TTP24A Power systems transmission structure hardware erection

Evidence shall show an understanding of the erection of power systems transmission structure hardware to an extent indicated by the following aspects:

T1 Requirements for the use of enterprise vehicles such as, trucks and four wheel drives encompassing:

- Standards, codes, legislation, supply authority regulations and or enterprise requirements associated with safe use of enterprise vehicles including relevant certification and licensing such as motor cars, light and heavy commercial trucks, heavy truck/trailer combination, four wheel drive vehicles.
- Compliance with regulations associated with the securing of loads prior for transportation.

T2 Generation systems encompassing:

- Methods of generating electricity - types of power stations and reasons for their location, layout of thermal and hydroelectric power stations
- Relationship between power control and load requirements - operating speeds for thermal and hydroelectric generating sets, typical generator voltage levels and output ratings
- The purpose and features of typical types of co-generation systems.

T3 Transmission, distribution and rail systems encompassing:

- Relationship between the transmission, distribution and rail/tram system within an overall power system - different organisations responsible for generation, transmission, distribution and rail/tram and, how they correlate and their functions
- Characteristics of a transmission, a distribution and a rail system - principal components, typical voltage levels and methods of transmission and distribution including grid type transmission systems, radial, parallel and ring main feeders
- Relationship between an overhead and underground supply systems within an overall power system - advantages/disadvantages, applications and the basic steps for planning and installing an overhead and underground distribution system
- Single line drawings and layouts - drawings and layouts of transmission and distribution systems including, radial, parallel and ring main feeders and the HV equipment associated with substations.

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 number of items on which skill is to be	Item List

	demonstrated	
A	At least one of the following:	Pyramid Delta Pi Enterprise specific types
B	At least one of the following:	Insulators Bolts Clamps
C	At least one of the following:	Crane Gin pole
D	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.

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 installation and maintenance on de-energised low voltage underground polymeric cables.

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 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)**

For optimisation of training and assessment effort, competence in this unit may be assessed concurrently with the following units:

UETTD RTP2 Establish and reinstate a power systems
2A transmission structure work site

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 erection of transmission tower hardware.

Tower types may include pyramid, delta and pi and other enterprise specific types.

Associated hardware may include insulators and associated bolts and clamps.

Methods of erection may include crane and/or gin pole.

Foundations may include mass concrete, caisson or pile-based and screw-anchor or bored types.

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
- Documenting detail work events, record keeping and or storage of information
- Drawings and specifications
- Emergency
- Environmental and sustainable energy procedures
- Environmental legislation
- Established procedures
- Fall prevention
- Hazards
- Identifying hazards
- Legislation
- MSDS
- Notification
- OHS practices
- OHS issues
- Permits and/or permits to work
- Personnel
- Quality assurance systems

RANGE STATEMENT

- Requirements
- Work clearance systems

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Transmission Units