



Australian Government

Department of Education, Employment and Workplace Relations

UEPOPS512B Manage the network_system

Release: 1

UEPOPS512B Manage the network_system

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This competency standard unit deals with the skills and knowledge required to manage a high voltage network/system (e.g. these systems may be interconnected, remote or isolated).

Application of the Unit

Application of the Unit 2)

This 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 do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships and the like.

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

UEPOPS420B

Coordinate the network/system.

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 levels. A description of what each level entails is provided in Section 2.3.1 Language, Literacy and Numeracy.

Reading 5

Writing 5

Numeracy 5

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 Plan and prepare network operations	1.1 Information and documentation to determine network/system status is assessed and evaluated in accordance with system requirements
	1.2 Network/system and associated equipment operational pre-requisites are established in accordance with enterprise/system procedures
	1.3 Sequence for operation of the network sections and equipment are created to suit a range of scenarios in accordance with enterprise/system procedures
	1.4 Forecast prediction is based on the accurate interpretation and assessment of relevant information in accordance with system procedures
	1.5 Network/system limitations and performance due to location and external influences are evaluated
	1.6 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2 Manage and control network /system	2.1 Network/system is operated in accordance with enterprise/system operating procedures
	2.2 Network/system demand is met with contingencies in place to maintain quality of supply standards in accordance with statutory requirements
	2.3 Network/system voltage and current

ELEMENT	PERFORMANCE CRITERIA
	requirements are assessed, evaluated and controlled to maintain stability and system integrity
	2.4 Voltage/load profiles are identified and adhered to minimising transmission losses
	2.5 Network/system load shedding sequence and priorities are monitored to ensure system integrity
	2.6 Network/system data is monitored for normal operation or to detect deviations
	2.7 Corrective actions to rectify abnormalities are implemented following assessment of data in accordance with system procedures
	2.8 Resources required to meet system requirements are managed in accordance with system procedures
	2.9 Where required, operations are carried out in consultation with team members
3 Analyse and respond to network/ system faults or incidents	3.1 Causes of abnormal network/system operating conditions are identified by analysing the technical and operational information in a logistical and sequential manner
	3.2 Operation of protection systems are evaluated to determine the nature and cause of fault conditions
	3.3 Communication may be established with other authorities and/or key stake holders to identify nature/source of system interference
	3.4 Corrective action is taken in accordance with enterprise/system procedures
	3.5 Network/system integrity and personnel safety are maintained through consultation with appropriate personnel and reference to plant technical, operational documentation and contingency plans

ELEMENT	PERFORMANCE CRITERIA
4 Review incident response and preventative procedures	4.1 Incident responses are assessed and reviewed in accordance with system procedures
	4.2 Alternative responses/contingencies are identified and assessed in accordance with system procedures
	4.3 Alternative responses/contingencies are documented and approved in accordance with system procedures
5 Complete documentation	5.1 Documentation is updated, log sheets maintained and equipment/system problems, movements abnormalities and status are reported and logged in accordance with enterprise/site procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired managing the network/system. 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 required follows:

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T1 Evidence shall show that knowledge has been acquired for safe working practices of:

- Relevant environmental, occupational health and safety legislation and regulations
- Enterprise procedures
- Plant drawings and manufacturers manuals
- Introduction to and typical arrangements of power production plant
- Relevant plant and equipment, its location and operating parameters
- Switchgear types and characteristics
- Electrical protection types and characteristics
- Electrical principles
- a.c. generators types and characteristics
- Transformers types and characteristics
- Relevant state and territory regulations
- Plant status;
- Enterprise recording procedures;
- System/Network types and characteristics;
- Contingency plans
- Problem solving techniques
- Supervisory, alarm, protection and control equipment;
- Load shedding principles;
- Control and data acquisition systems;
- Computers and software;
- Switching practices and procedures

T2 Specific skills needed to achieve the performance criteria:

- Interpret plant drawings and manufacturers manuals
- Apply relevant state and territory regulations
- Apply relevant statutory legislation;
- Apply relevant enterprise/site safety procedures;
- Apply enterprise/site emergency procedures and techniques;
- Apply enterprise recording procedures;
- Manager and control system/network;

REQUIRED SKILLS AND KNOWLEDGE

- Identify plant status;
- Communicate effectively;
- Apply data analysis techniques and tools;
- Identify and respond to abnormal system operating conditions;
- Plan and prioritise work; ;
- Apply stress management techniques;
- Direct and coordinate personnel;
- Select appropriate load shedding;
- Apply diagnostic techniques.

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 components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitude 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.

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 practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included 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 pre-requisites 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 – UEP12". Evidence shall also comprise:

- A representative body of work performance 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 OHS workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in 6) of this unit
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
 - Knowledge and application of relevant sections of: OHS legislation; Statutory legislation; Enterprise/site safety

procedures; Enterprise/site emergency procedures

- Relevant system type
- Preparing for system operations
- Managing and controlling a Network/System operation
- Coordination requirements
- Analysing and responding to faults and abnormal system operating conditions
- Impact of actions
- 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 undertake actual work as prescribed by this competency standard unit.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

**Method of
assessment** **9.4)**

This unit shall be assessed by methods given in Section 1.3.00 Assessment Guidelines. Assessment Guidelines.

Note:

Competent performance with inherent safe working practices is

expected in the Industry to which this 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 Skills described in this unit.

**Concurrent
assessment and
relationship with
other units**

9.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed
Nil

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.

Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules, relevant state and federal legislation and national standards for plant

Information and documentation sources may include verbal or written communications; enterprise safety rules documentation; enterprise operating instructions; dedicated computer equipment; enterprise/site standing and operating instructions; enterprise log books; manufacturer's operation and maintenance manuals; and equipment and alarm manuals

Systems may be interconnected, remote or isolated

Technical and operational indicators may include local indicators and recorders, computers and alarms (visible and or audible)

Key indicators may include voltage, current, reactive power flows, load, equipment loading limits, system node points, frequency and plant status

Communications may be by means of telephone, two way radio, pager, computer (electronic mail) and operating logs (written or verbal)

Appropriate personnel, team members/other authorities may include supervisor/team leader or equivalent, power plant operations personnel or equivalent, technical and engineering officers or equivalent, maintenance staff, other operating staff or equivalent, system controller, field operators, restricted operators, emergency personnel, network controllers/coordinators, generation controllers, plant operators, field operators, support staff, fire service, police, ambulance, emergency services, enterprise and site representatives, consumers and independent power producers

Equipment may include machines, circuit breakers, tap changers, protection settings, capacitor/condenser banks, generators and SCADA systems

Voltage control may be synchronous compensator, generation VAR output, capacitor/condenser, switchgear, tap changers and network configuration

System integrity may be affected by machine and system stability, transmission line and transformer overloading, correct tap changer position, protection settings, voltage transformer selection, synchronising, required load shedding selected,

capacitor/condenser bank selection, loss of network and generation components

System limitations may include location, weather conditions, natural disasters, accidents, temperature and power swings

Contingencies may include responsive spinning reserve, spare/stand-by plant and load shedding

Types of incidents may include localised blackout, interconnected/isolated power system potential power system threat, accidents, life threatening situations, generation plant and auxiliary plant faults/failure, loss of network and generation components

Team members/other authorities may include network controllers/coordinators, generation controllers, plant operators, field operators, support staff, fire service, police, ambulance, emergency services, enterprise and site representatives, consumers and independent power producers

RANGE STATEMENT

System condition may be voltage profiles, spare plant, generation/transmission capability limits, deviation from generation schedule, variation from normal trends, plant testing, switching programs and responsive spinning reserve

Unit operations may include spurious faults in automatic systems, automatic systems operating out of range, failure of automatic system components and routine plant movement.

Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Section 2.1 Preliminary Information and Glossaries.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	11)
	Operations.