



Australian Government

Department of Education, Employment and Workplace Relations

UEPOPS441B Operate and monitor system equipment

Release: 1

UEPOPS441B Operate and monitor system equipment

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit deals with skills and knowledge to operate, monitor and control of H.V. apparatus on the system, via SCADA control.

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.

There are no pre-requisite units.

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 4 Writing 4 Numeracy 4

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 work	1.1 Safety issues are identified in accordance with enterprise/system requirements
	1.2 System requirements are identified from relevant personnel and documentation
	1.3 System and associated equipment operational pre-requisites are identified and established in accordance with manufacturers and/or enterprise/site procedures
	1.4 Sequence for recommissioning of equipment is identified and determined in accordance with enterprise/system requirements
	1.5 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 Operate system equipment	2.1 The equipment is operated in accordance with enterprise/system procedures/programs
	2.2 Load shedding requirements are identified, selected and monitored during equipment operations to ensure system integrity
	2.3 Operations are carried out in consultation with appropriate personnel in accordance with enterprise/site requirements
3 Monitor system equipment	3.1 Voltage and current requirements are assessed, evaluated and controlled to maintain system integrity and stability
	3.2 Equipment is monitored for normal operations or to detect deviations in accordance with system procedures
	3.3 Corrective actions to rectify abnormalities are undertaken in accordance with system procedures
	3.4 Appropriate personnel are notified when defects and/or abnormal operating conditions are detected in accordance with operating

ELEMENT	PERFORMANCE CRITERIA
	procedures
4 Analyse equipment faults	4.1 Cause of equipment operating faults are identified by analysing the technical and operational information in a logical and sequential manner
	4.2 Operation of protection system is identified and assessed to evaluate the nature and cause of fault conditions
	4.3 Communication is established with other authorities and/or key stakeholders to identify nature/source of equipment fault/ failure
	4.4 Corrective action taken is in accordance with enterprise/site procedures
	4.5 Network/system integrity and personnel safety are maintained through consultation with appropriate personnel, and reference to plant, technical and operational documentation and contingency plans
5 Complete documentation	5.1 Documentation is updated and maintained and equipment 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 operating and monitoring system equipment.

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:

KS01-PO441B System equipment

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
- Relevant state and territory regulations
- Switchgear types and characteristics
- Electrical protection types and characteristics
- Electrical principles
- Transformers types and characteristics
- Equipment status
- Enterprise recording procedures
- Control and data acquisition systems
- Supervisory, alarm, protection and control equipment

T2 Specific skills needed to achieve the Performance Criteria:

- Interpret plant drawings and manufacturers manuals
- Apply relevant state and territory regulations
- Apply enterprise recording procedures
- Operate screen based equipment
- Identify equipment status
- Plan and prioritise work
- Communicate effectively
- Apply data analysis techniques and tools
- Identify and respond to abnormal equipment operating conditions

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 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 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 Occupational Health and Safety 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) Essential Knowledge and Associated Skills of this unit
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant Anti-Discrimination legislation, regulations, policies and workplace procedure
- Demonstrated performance across a representative range of contexts from the prescribed items below:
 - The knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures, Planning and preparing for work, Operating system equipment, Monitoring system equipment, Analysing equipment faults, Knowledge of implications 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 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.

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.

Equipment may include machines, circuit breakers, tap changers, protection settings, capacitor/condenser banks, switch gear, generators and transformers.

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

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.

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

Communications may be by means of telephone, two way radio, pager, public address system, computer (electronic mail) and operating log (written or verbal).

Appropriate personnel to consult, give or receive direction 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/network controller, field operator and restricted HV operators.

Operations may be continuous operation or during inclement or otherwise harsh weather conditions or during night periods.

Faults and abnormal operating conditions may include control equipment failure/malfunctions, loss of electrical supply to plant and equipment, loss of transmission components, system limitations due to location, weather conditions, natural disasters, accidents, temperature and power swings.

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

Voltage control may include synchronous compensatory, generation VAR output, capacitor/condenser, tap changers and system configuration.

System integrity may include machine and system instability, transmission line and transformer overloading, incorrect tap changer position, protection settings, voltage transformer selection, synchronising, required load shedding and capacitor/condenser bank selection.

Operational pre-requisites may include switching programmes, pre-operational checks and plant status.

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