



Australian Government

Department of Education, Employment and Workplace Relations

UEPOPS342B Interpret and analyse single operation protection devices

Release: 1

UEPOPS342B Interpret and analyse single operation protection devices

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit deals with the skills and knowledge required to interpret and analyse of the operation of single operation protection devices.

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.

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 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 Respond to protection operation	1.1 Protection operation is confirmed in accordance with enterprise procedures
	1.2 Apparatus affected is identified in accordance with enterprise procedures
	1.3 Targets, flags and alarms are identified and recorded in accordance with enterprise/site procedure
	1.4 Relevant stake holders are advised in accordance with enterprise procedures
	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 Interpret and determine cause of protection operation	2.1 External information is managed and communication with external stakeholders is conducted and recorded in accordance with enterprise procedures
	2.2 Information is collated and assessed in a logical and sequential manner in accordance with enterprise procedures
	2.3 Sequence of events prior to and following protection operation is identified and assessed in accordance with enterprise procedures
	2.4 Protection operations are assessed and evaluated in accordance with enterprise procedures
	2.5 Findings are analysed in conjunction with protection type and recorded data, to determine most probable cause of protection operation
3 Restore protection	3.1 All relevant stake holders are informed of findings and plan of action in accordance with enterprise procedures
	3.2 Relevant protection indicators are reset in accordance with enterprise procedures

ELEMENT	PERFORMANCE CRITERIA
4 Complete documentation	3.3 Corrective action is taken according to fault type in accordance with enterprise/site procedures
	4.1 Records are maintained and all events and operations are logged in accordance with enterprise 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 must show that knowledge has been acquired of safe working practices and interpretation and analysis of single operation protection devices.

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

KS01-PO342B Interpret and analyse single operation protection devices

Evidence shall show an understanding of how to interpret and analyse the operation of single operation devices to an extent indicated by the following aspects:

T1 Introduction to protection schemes

- Functions of electrical protection schemes
- Features of electrical protection schemes
- Types of electrical faults
- Functions of mechanical protection schemes
- Features of mechanical protection schemes
- Types of mechanical faults
- Alarms and flags raised by protection devices

T2 Alternating Current (AC) motors

- Application of motors in electricity generating plants
- Three-phase motors
- Starter operations and applications
- Single-phase motor principles
- Construction of single-phase motors
- Synchronous motors
- Fault testing

T3 Electrical protection devices

- Fuses
- Thermal overload devices
- Over-temperature devices
- Over-current devices
- LV circuit breakers
- Over and under-voltage relays
- Re-setting or restoring electrical protection

T4 Mechanical protection devices

- Mechanical interlocks
 - Flow switches
 - Suction valve failures
- Re-setting or restoring mechanical protection

REQUIRED SKILLS AND KNOWLEDGE

T5 Fault finding theory

- Linear approach (logical step-by-step sequential elimination of source of fault)
- Half-split rule (progressive isolation of the faulty system in halves until the fault is identified).
- Sensory detection (using senses of sight, sound, and smell to recognise faults).
- Continuity testing

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 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 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 practised. 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 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 procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
 - Knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory

legislation; Enterprise/site safety procedures;
Enterprise/site emergency procedures

- Responding to protection equipment operation
- Interpreting and determining cause of equipment operation
- Restoring protection
- Knowledge of protection equipment and schemes
- 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 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.

Protection may include over current, over voltage/overload, bucholtz, winding temperatures, and related L.V. protection.

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 operation and maintenance manuals; and equipment and alarm manuals.

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

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

Appropriate personnel for consultation, giving or receiving 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, restricted H.V. operators, independent generators and customers.

Operating environment may be remote from plant and equipment being operated, (operation is assisted by remote indicators of plant status and other parameters monitored), during inclement or otherwise harsh weather conditions, in wet/noisy/dusty areas or during night periods.

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.

