



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **UEPOPS427A Interpret and Analyse Low Voltage and Mechanical Protection Devices**

**Release: 1**

## **UEPOPS427A Interpret and Analyse Low Voltage and Mechanical Protection Devices**

### **Modification History**

Not Applicable

### **Unit Descriptor**

#### **Unit Descriptor**

**1)**

This unit refers to the ability to interpret and analyse the conditions that have initiated the operation of low voltage and or mechanical protection device and to subsequently take corrective action in response to the operation of the device.

### **Application of the Unit**

#### **Application of the Unit**

**3)**

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

#### **License to practise**

**3.1)**

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.

### **Licensing/Regulatory Information**

Not Applicable

## Pre-Requisites

**Prerequisite Unit(s)** 2)

**Competencies** 2.1)

There are no prerequisite units.

## Employability Skills Information

Refer to the Evidence Guide

## Elements and Performance Criteria Pre-Content

5) Elements describe the essential outcomes of a unit of competency

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 LV/mechanical protection device 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 stakeholders are advised in accordance with enterprise procedures
	1.5 Where appropriate, the team's and individuals' roles and responsibilities within the team are identified
	1.6 Where required, assistance is given in the provision of on-the-job training

ELEMENT	PERFORMANCE CRITERIA
2 Interpret conditions under which the operation of a LV/mechanical protection device occurred and determine the cause of 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 Where appropriate the simultaneous or sequential operation of multiple protection device is assessed and evaluated in accordance with enterprise procedures
	2.5 Findings are analysed with due regard for the type of protection device and recorded data, to determine most probable cause of protection operation
3 Take corrective action in response to the operation of LV/mechanical protection device/s	3.1 All relevant stakeholders are informed of findings and plan of action in accordance with enterprise procedures
	3.2 Corrective action is taken, in accordance with enterprise/site procedures, to normalise the condition which has initiated the operation of the protection device and/or minimise the effect of the abnormal condition

ELEMENT	PERFORMANCE CRITERIA
4 Reset or restore LV/mechanical protection device	4.1 Relevant mechanical protection devices and related indicators are reset or restored to the correct position required to monitor the plant in accordance with enterprise procedures
5 Complete documentation	5.1 Records are maintained and all events and operations are logged in accordance with enterprise procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

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

Evidence shall show that knowledge has been acquired in interpreting and analysing low voltage mechanical protection devices.

The extent of the Essential Knowledge and Associated Skills required follows:

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

- Relevant Occupational Health and Safety regulations;
- Relevant statutory legislation; relevant enterprise/site safety procedures
- Enterprise/site emergency procedures and techniques
- Enterprise recording procedures; the purpose, function and operation of mechanical protection devices and schemes
- The location of relevant plant and equipment
- Normal and abnormal operating parameters and status
- Relevant methods and procedures for: responding to protection equipment operation
- Trouble-shooting methods associated with interpreting data and determining the cause of mechanical protection device operation
- The procedures to be used for resetting or restoring mechanical protection devices to

## REQUIRED SKILLS AND KNOWLEDGE

service

Specific skills needed to achieve the Performance Criteria:

- Apply relevant Occupational Health and Safety regulations
  - Apply relevant statutory legislation
  - Apply relevant enterprise/site safety procedures
  - Apply enterprise/site emergency procedures and techniques
  - Apply enterprise recording procedures
  - Use plans, drawings and symbols
  - Communicate effectively
  - Plan and prioritise work
  - Identify plant status and recognise abnormal plant/system/equipment operating conditions
  - Identify instances of mechanical protection device operation
  - Apply data analysis and diagnostic techniques and tools to the operating environment
  - Determine appropriate corrective action and carry out such action when required.
-

## Evidence Guide

### EVIDENCE GUIDE

8) 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

##### 8.1)

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.

## EVIDENCE GUIDE

**Critical aspects of evidence required to demonstrate competency in this unit**

**8.2)**

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 - UEP06". 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:



## EVIDENCE GUIDE

- 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 skills enabling employment
- 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.
  - The knowledge of the purpose, function and operation of mechanical protection devices and schemes
  - The ability to respond to mechanical protection device operation
  - The ability to interpret the immediate plant conditions and determine the cause of mechanical protection device operation
  - The ability to determine appropriate corrective action in response to the operation of mechanical protection devices and carry out such action when required
  - The ability to reset and/or restore the mechanical protection device to service
  - 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

#### 8.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of

## EVIDENCE GUIDE

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

#### 8.4)

This 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 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

#### 8.5)

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

## EVIDENCE GUIDE

### Key competencies 8.6)

Evidence that particular key competencies have been achieved within this unit is in the context of the following Performance Criteria of evidence. See Volume 2, Part 4 for an explanation of Key competencies and levels of this Training Package.

Key competencies	Example of Application	Performance Level
How are ideas and information communicated within this competency?	Refer to the following example of application:  Explain ideas and actions, make suggestions for alternative actions and deal with contingencies and non-routine situations.	2
How can information be collected, analysed and organised?	Refer to the following example of application:  Information with regard to operations, faults and maintenance may be observed and monitored for analysis and organised into records and reports.	2
How are activities planned and organised?	Refer to the following example of application:  Planning the required activity, to include co-ordination and use of equipment, materials and tools to avoid backtracking and rework.	2
How is team work used within this competency?	Refer to the following example of application:  Coordinate activities of the team and provide appropriate support to other team members in completion of work tasks to meet the team's goals.	2
How are mathematical ideas and techniques used?	Refer to the following example of application:  Calculation of time to complete routine projects, operations, tasks, estimation of distances, levels, loads and material requirements.	2
How are problem solving skills applied?	Refer to the following example of application:  Determine solutions which focus on long and short-term resolution of work task problems.	2

**EVIDENCE GUIDE**

How is use of technology applied?	Refer to the following example of application:  Access, communicate, measure and provide information to monitor operations and performance of plant and equipment.	2
-----------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---

**Skills Enabling Employment****8.7)**

Evidence that competency in this unit incorporates skills enabling employment is in the context of the following performance. See Volume 2, Part 5 for definitions and an explanation of skills enabling employment.

<b>Skills for Employment</b>		<b>Example of Application</b>
1	Developing and using skills within a real workplace	Refer to the following example of application:  Completion of tasks within an acceptable timeframe and performance with some supervision.
2	Learning to learn in the workplace	Refer to the following example of application:  Comprehension and application of theoretical knowledge to well-developed skills.
3	Reflecting on the outcome and process of work task	Refer to the following example of application:  Focused on improvement in own and other team member's performance in the workplace.
4	Interacting and understanding of the context of the work task	Refer to the following example of application:  Working understanding of the processes and systems which apply to the workplace.
5	Planning and organising the meaningful work task	Refer to the following example of application:  Achieving work tasks in a timely manner and ensuring that the work team achieves its stated work goals.
6	Performing the work task in non-routine or	Refer to the following example of application:  Seek advice and apply solutions to problems relevant to the

contingent situations	workplace environment.
-----------------------	------------------------

## Range Statement

### RANGE STATEMENT

7) 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.

Mechanical protection devices may include alarm and tripping functions of the following: level detection; proximity detection, position detection, temperature detection, temperature differential detection, thermal rate of rise detection, expansion detection, differential expansion detection, eccentricity detection, pressure detection, pressure differential detection, vibration detection, under-speed detection, over-speed detection, belt tracking, blocked shute, belt sag, direct mechanical interlock and operation prevention devices.

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; computer-based and computer accessed documentation; 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 sensory stimuli (auditory, olfactory, tactile, visual), local indicators and recorders, computers and alarms (visible and/or audible).

Communications may be by direct personal interaction or by means of telephone, verbal or text-based telephone messaging, two way radio, pager, computer (electronic mail) and/or 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 the plant and equipment being operated, (in cases where operation is assisted by remote indication of operating parameters and plant status), during inclement or otherwise harsh weather conditions, in hot/wet/noisy/dusty/elevated/confined or enclosed 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

## **RANGE STATEMENT**

definition of these and other terms are given in Volume 2, Part 1.

## **Unit Sector(s)**

Not Applicable

## **Literacy and numeracy skills**

### **Literacy and numeracy skills**

2.2)  
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 4      Writing 4      Numeracy 4

## **Competency Field**

### **Competency Field**

4)  
Operations