



**Australian Government**

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

# **UEPOPS243A Operate Air Conditioning Plant**

**Release: 1**

## UEPOPS243A Operate Air Conditioning Plant

### Modification History

Not Applicable

### Unit Descriptor

- **Unit Descriptor** 1)

This unit deals with the skills and knowledge required to operate and inspect all air conditioning plant.

### 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 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 to comply with enterprise/site requirements  1.2 Work requirements are identified from relevant personnel and documentation  1.3 Documentation to determine plant status is assessed and evaluated  1.4 Localised plant inspection and field preparations for service are carried out in accordance with enterprise/site operational requirements  1.5 Plant operational prerequisites are established in accordance with manufacturer's and enterprise/site requirements  1.6 Sequence for recommissioning of plant is determined to suit existing circumstances in accordance with enterprise/site requirements

- **ELEMENT**
  - **PERFORMANCE CRITERIA**
- |   |                      |     |  |
|---|----------------------|-----|--|
| 2 | Operate plant        | 1.7 | 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 |
|   |                      | 2.1 | Plant is operated in accordance with enterprise, site and manufacturer's operating procedures  |
|   |                      | 2.2 | Plant is monitored and observed to detect deviations from normal operating conditions  |
|   |                      | 2.3 | Corrective actions taken to rectify abnormalities are in accordance with industry standards and site requirements  |
|   |                      | 2.4 | Plant to be removed from service is identified and removed from service in accordance with enterprise and site requirements  |
|   |                      | 2.5 | Corrective actions are taken in accordance with enterprise safety rules and site requirements when abnormalities are identified during the removal from service                |
| 3 | Test plant operation | 3.1 | Tests are performed in accordance with defined procedures applicable to the operational test   |
|   |                      | 3.2 | Plant is observed for correct operational response   |
|   |                      | 3.3 | Corrective action is taken when response is not in accordance with documentation, plant integrity or personnel safety requirements   |
|   |                      | 3.4 | Plant is returned to required operational status upon completion of test   |
| 4 | Analyse plant faults | 4.1 | Causes of abnormal plant operating conditions are identified by analysing the technical and operational information in a logical and sequential manner                         |
|   |                      | 4.2 | Corrective action taken is in accordance with enterprise procedures  |
|   |                      | 4.3 | Plant integrity and personnel safety is maintained through consultation with appropriate personnel, and with reference to  |

<b>• ELEMENT</b>	<b>• PERFORMANCE CRITERIA</b>
5 Monitor and inspect plant	5.1 Plant to be monitored/inspected is physically identified 5.2 Plant is monitored/inspected for normal operation or to detect deviations 5.3 Corrective action taken is in accordance with enterprise/site procedures 5.4 Appropriate personnel are notified when defects are detected
6 Complete documentation	6.1 Documentation is updated and plant problems, movements, abnormalities and status are reported and logged in accordance with enterprise/site 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 of operating air conditioning plants.

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
- Relevant plant and equipment, its location and operating parameters
- Plant status
- Environmental legislation
- Enterprise recording procedures

- **REQUIRED SKILLS AND KNOWLEDGE**

- Communication principles
- Control and data acquisition systems
- Computers and software
- Supervisory, alarm, protection and control equipment
- Emergency procedures
- Basic motor performance
- Basic pump and compressor performance
- Valve, damper and actuator types and characteristics
- Knowledge of legionella bacteria control procedures

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
- Identify plant status
- Prepare plant/equipment for operation
- Organise resources
- Operate air conditioning plant
- Apply diagnostic and testing techniques
- Identify and respond to abnormal plant operating conditions
- Plan and prioritise work
- Use relevant hand tools
- Communicate effectively
- Apply data analysis techniques and tools
- Use diagrams, drawings and symbols
- Apply knowledge of legionella bacteria control procedures.

## 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 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

##### 8.1)

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 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**

**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:



- 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, polices 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
  - Preparation and planning of work
  - Operation of air conditioning plant
  - Operationally testing plant
  - Analysing plant faults
  - Monitoring plant operation
  - Applying knowledge of legionella bacteria control procedures
  - 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 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 method 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 competency standard 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)**

For optimisation of training and assessment effort, competence in this unit may be assessed concurrently with the unit(s) as stated in Section 3.1 as well as the following units:

Nil

#### **Key competencies**

#### **8.6)**

Evidence that particular key competencies have been achieved within this competency standard 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.

<b>Key competencies</b>	<b>Example of Application</b>	<b>Performance Level</b>
How are ideas and information communicated within this competency?	Refer to the following example of application:  Sharing information orally or in writing in simple English to confirm work requirements. Discussion may take place with supervisors or	1

	others in the work group.	
How can information be collected, analysed and organised?	Refer to the following example of application:  Accessing information required for operating the plant / equipment, including operating procedures and work instructions.	1

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.	1
How is team work used within this competency?	Refer to the following example of application:  Teamwork may be applied in communicating the methods and procedures for the operation of the plant and equipment.	1
How are mathematical ideas and techniques used?	Refer to the following example of application:  Calculation of time to complete tasks, estimation of distances, levels, loads and material requirements.	1
How are problem solving skills applied?	Refer to the following example of application:  Follow established operational procedures.	1
How is use of technology applied?	Refer to the following example of application:  Access, communicate, measure and record information with regard to operations and performance of plant and equipment.	1

**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 under supervision.
2	Learning to learn in the workplace	Refer to the following example of application:  Recalling of knowledge and development of practical skills.
3	Reflecting on the outcome and process of work task	Refer to the following example of application:  Recognition that performance of a work task meets the accepted standard.
4	Interacting and understanding of the context of the work task	Refer to the following example of application:  Completion of work tasks to meet the team's goals.
5	Planning and organising the meaningful work task	Refer to the following example of application:  Achievement of work tasks in a timely manner which contributes to the team's objectives.
6	Performing the work task in non-routine or contingent situations	Refer to the following example of application:  Complete the assigned work task to meet timelines and to seek supervisor assistance as required.

## 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.

Systems, plant and/or equipment may include electrical supply switchboard(s) and transformers; air conditioner compressors; chillers and associated cooling plant; air fans; humidifiers; heaters and filters; electrical motors; valves, actuators and dampers (electric, hydraulic, pneumatic and manual); supervisory, alarm, protection and control equipment; and chemical dosing equipment.

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 and written communications, enterprise/site safety rules documentation, enterprise operating instructions, manufacturer's operation and maintenance manuals, equipment and alarm manuals, dedicated computer equipment, enterprise standing instructions and plant notes and enterprise log books.

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

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

Tests may include motor direction checks, stand-by plant "cut-in" tests and performance tests.

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, contractor staff and maintenance staff.

Test, fault finding and operating tools may include hand and power tools and proving dead equipment.

Operating environment may be during inclement or otherwise harsh weather conditions, in wet/noisy/dusty/hot areas and during continuous operation.

Faults and abnormal operating conditions may include motor/pump/ actuator/valve/fan failure/malfunctions, control equipment failures/ malfunctions, loss of electrical supply to plant and equipment, excessive vibration pumps/motors, cooling tower abnormal operation, legionella bacteria count high and refrigerant compressor malfunction/failure.

Generic terms are used throughout this Training Package for vocational standard shall

- **RANGE STATEMENT**

be regarded as part of the Range Statement in which competency is demonstrated. The 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 2      Writing 2      Numeracy 2

## **Competency Field**

### **Competency Field 4)**

Operations.