



**Australian Government**

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

# **PMAOPS234A Monitor and operate low pressure compressors**

**Revision Number: 1**

## PMAOPS234A Monitor and operate low pressure compressors

### Modification History

Not applicable.

### Unit Descriptor

|                        |   |
|------------------------|---|
| <b>Unit descriptor</b> | This unit of competency covers the operation of low pressure compressors which are typically relatively simple to operate. The compressor may, or may not, have a high level of technical complexity. The compressor may have essential ancillary equipment but the operation of this ancillary equipment is largely integrated with the normal operation of the compressor unit itself. It includes the recognition and resolution of routine only problems. |
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## Application of the Unit

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| <p><b>Application of the unit</b></p> | <p>This unit of competency applies to operators who are responsible for the operation of compressors which are relatively simple to operate. Typically the compressor may be used to provide suction or a moderately low pressure only. The compressor may be technically sophisticated and/or have sophisticated controls built in, but its operation is relatively simple. A typical example might be the operation of a low pressure, low volume screw compressor in a coal seam gas (CSG) gathering system.</p> <p>This Training Package has three possible units of competency applicable to the operation of compressors:</p> <ul style="list-style-type: none"> <li>• <i>MSAPMOPS100A Use equipment</i> which is applicable to the typical, small, hired, skid or trailer mounted compressor where the major operation is to turn on and turn off and maybe monitor pressure and perhaps another variable or two (e.g. water removal)</li> <li>• <i>PMAOPS234A Monitor and operate low pressure compressors</i> (this unit) applies to low pressure, usually simple to operate compressors, but still ones requiring start-up/shutdown and some monitoring and adjustment</li> <li>• <i>PMAOPS304B Operate and monitor compressor systems and equipment</i> which is applicable to complex compressors, typically delivering high pressure and also requiring the operation of prime movers, intercoolers and forced lubrication systems. These compressors are usually high pressure, high volume compressors.</li> </ul> <p>The operator will also be expected to:</p> <ul style="list-style-type: none"> <li>• identify hazards and take appropriate action</li> <li>• recognise problems</li> <li>• resolve routine problems</li> <li>• report other problems.</li> </ul> <p>This competency is typically performed by operators working independently while in communication with a field or plant operator with whom they would work as part of a team. At all times they would be liaising and cooperating with other members of the team.</p> |
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

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| <b>Prerequisite units</b> |  |  |
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## Employability Skills Information

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| <b>Employability skills</b> | This unit contains employability skills. |
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## Elements and Performance Criteria Pre-Content

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| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
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## Elements and Performance Criteria

| <b>ELEMENT</b>                       | <b>PERFORMANCE CRITERIA</b>   |
|--------------------------------------|---|
| 1. Prepare for work                  | 1.1. Identify work requirements<br>1.2. Identify and control hazards<br>1.3. Coordinate with appropriate personnel  |
| 2. Operate compressor                | 2.1. Identify type of compressor<br>2.2. Start up and shut down compressor according to compressor type and duty<br>2.3. Complete routine checks, reads and logs<br>2.4. Make adjustments as required<br>2.5. Identify problems and take appropriate action<br>2.6. Complete logs and reports as required |
| 3. Isolate and de-isolate compressor | 3.1. Isolate compressor<br>3.2. Make safe as required<br>3.3. Check plant is ready to be returned to service<br>3.4. Prepare plant for return to service<br>3.5. Complete logs and reports as required  |

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- recognising conditions which will lead to out of specification operation
- implementing enterprise procedures within time constraints and in a manner relevant to the correct use of the equipment
- conveying information relevant to the operation clearly and effectively
- maintaining appropriate levels of quality assurance
- reading and numeracy to interpret workplace documents and technical information

#### Required knowledge

Required knowledge includes:

- compressor/pumping principles
- gas flow principles
- typical issues causing problems
- process parameters and limits (e.g. temperature, pressure and flow)
- duty of care obligations
- hierarchy of control
- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities)
- routine problems, faults and their symptoms
- relevant alarms and actions
- plant process idiosyncrasies
- all items on a schematic of the plant item and the function/principles of operation of each
- physics relevant to the processes used
- flange pressure and temperature ratings (basic)
- relevant environmental and heritage requirements
- protective systems
- control systems

## Evidence Guide

| <b>EVIDENCE GUIDE</b>   |   |
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| <p>The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p> |   |
| <p><b>Overview of assessment</b></p>  | <p>This unit of competency requires an application of the knowledge contained in the use of the equipment, to the level needed to maintain control and recognise and resolve problems.</p>  |
| <p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>  | <p>Assessment for this unit of competency will be on a plant.</p> <p>It is essential that the equipment be understood and that the importance of critical material properties, settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action.</p> <p>Consistent performance should be demonstrated. In particular look to see that:</p> <ul style="list-style-type: none"> <li>• appropriate checks are made</li> <li>• required readings are taken</li> <li>• early warning signs of equipment processes needing attention or with potential problems are recognised</li> <li>• necessary actions are completed.</li> </ul> <p>Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.</p> |
| <p><b>Context of and specific resources for assessment</b></p>  | <p>Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation.</p> <p>Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D</p>  |

| <b>EVIDENCE GUIDE</b>                      |  |
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|  | <p>virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life-threatening situations, simulation may be used for the bulk of the training.</p> <p>A bank of scenarios/case studies/what-ifs and questions will be required to probe the reasoning behind observable actions.</p> |
| <b>Method of assessment</b>                | <p>In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units.</p> <p>Individual enterprises may choose to add prerequisites and co-requisites relevant to their processes.</p>   |
| <b>Guidance information for assessment</b> | <p>Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>   |

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

#### Procedures

Procedures may be written, verbal, computer-based or in some other form. They include:

- all work instructions
- standard operating procedures
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (e.g. Responsible Care) and government regulations

All work will comply with procedures

#### Routine check reads and logs

Routine check reads and logs may include:

- lubricating oil levels
- temperatures (inlet and outlet)
- pressures (inlet and outlet)
- speed
- other items

#### Logs and reports

Logs and reports may be paper or electronic based and may also include verbal/radio reports

Reports include reporting items found which require action

#### Identified faults

Identified faults may include:

| <b>RANGE STATEMENT</b>                |   |
|---------------------------------------|---|
|                                       | <ul style="list-style-type: none"> <li>• instrumentation failure/malfunction</li> <li>• electrical failure/malfunction</li> <li>• mechanical failure/malfunction</li> <li>• control system failure/malfunction</li> <li>• mismatch between flow rates and system requirements</li> <li>• wear, tear and corrosion of plant and equipment</li> </ul>   |
| <b>Typical problems</b>               | <p>Typical problems may include:</p> <ul style="list-style-type: none"> <li>• leakage</li> <li>• vibration</li> <li>• loss of control of pressure and/or flow</li> <li>• blockages</li> <li>• equipment failure</li> <li>• lack of water removal from gas</li> <li>• high differential pressure on lube oil filters</li> </ul>  |
| <b>Start up/shut down as required</b> | <p>Start up/shut down as required includes:</p> <ul style="list-style-type: none"> <li>• start up and shut down to/from normal operating conditions</li> <li>• replacement of faulty units</li> <li>• start up and shut down to/from isolated, cold, empty</li> <li>• all other conditions experienced on the plant, i.e. from any condition to any condition experienced on the plant</li> </ul>   |
| <b>Appropriate action</b>             | <p>Appropriate action includes:</p> <ul style="list-style-type: none"> <li>• determining problems needing action</li> <li>• determining possible fault causes</li> <li>• rectifying problem using appropriate solution within area of responsibility</li> <li>• following through items initiated until final resolution has occurred</li> <li>• reporting problems outside area of responsibility to designated person</li> </ul> <p>In this unit problem solving is restricted to routine problems only</p> |
| <b>Routine problems</b>               | <p>Respond to routine problems means 'apply known solutions to a limited range of predictable problems'.</p>  |

| <b>RANGE STATEMENT</b>                      |   |
|---|---|
|   | Typically such problems and their solutions are listed in the procedures  |
| <b>Health, safety and environment (HSE)</b> | All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state, territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence |

### Unit Sector(s)

|                    |                       |
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| <b>Unit sector</b> | Operational/technical |
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### Competency field

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| <b>Competency field</b> |  |
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### Co-requisite units

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|---------------------------|--|--|
| <b>Co-requisite units</b> |  |  |
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