



**Australian Government**

# **PMAOPS247A Operate powered separation equipment**

**Release 1**

# **PMAOPS247A Operate powered separation equipment**

## **Modification History**

New unit – Replaces PMAOPS207B – Equivalent

## **Unit Descriptor**

This unit of competency covers the skills and knowledge needed to operate typical powered dual phase separation equipment as used in a chemical, oil/hydrocarbons or metalliferous minerals processing plant. It also includes solving problems with separation processes and the equipment, including the driver powering the separation equipment.

## **Application of the Unit**

This unit applies to a person who has the responsibility for starting up and shutting down separation equipment to procedures, and making adjustments to flow rate and pressure, depending on the type of separation equipment.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator as appropriate.

This unit does not cover stand alone, non-powered dual phase separation equipment or chemical separation equipment, which are instead covered by:

- *PMAOPS246A Operate separation equipment*
- *PMAOPS208B Operate chemical separation equipment.*

## **Licensing/Regulatory Information**

Not applicable.

## **Pre-Requisites**

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

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.

## Elements and Performance Criteria

- |   |                                      |     |  |
|---|--------------------------------------|-----|--|
| 1 | Prepare for work                     | 1.1 | Identify work requirements   |
|   |                                      | 1.2 | Identify and control hazards   |
|   |                                      | 1.3 | Coordinate with appropriate personnel  |
|   |                                      | 1.4 | Check for recent work undertaken on plant  |
|   |                                      | 1.5 | Note any outstanding/incomplete work   |
|   |                                      | 1.6 | Check operational status of separation plant/equipment   |
|   |                                      | 1.7 | Complete any required pre-start checks   |
| 2 | Operate powered separation equipment | 2.1 | Identify the type of powered separation equipment  |
|   |                                      | 2.2 | Start up and shut down separation equipment according to the separation equipment type and duty          |
|   |                                      | 2.3 | Adjust flow and pressure as appropriate to type of separation equipment                                  |
|   |                                      | 2.4 | Complete routine checks, logs and paperwork, taking appropriate action on unexpected readings and trends |

- |   |   |     |  |
|---|---|-----|--|
| 3 | Operate drivers of separation equipment           | 3.1 | Monitor critical variables, such as amps, temperature and vibration  |
|   |   | 3.2 | Keep critical variables in range   |
|   |   | 3.3 | Recognise trends/patterns which indicate a potential or actual problem with the driver   |
|   |   | 3.4 | Take appropriate action to ensure driver is returned to full performance in a timely manner  |
|   |   |     |  |
| 4 | Recognise and take appropriate action on problems | 4.1 | Monitor plant frequently and critically throughout shift using measured/indicated data and senses (e.g. sight and hearing), as appropriate |
|   |   | 4.2 | Recognise developing situations which may require action   |
|   |   | 4.3 | Make appropriate adjustments to separation equipment and duty  |
|   |   | 4.4 | Take other appropriate actions on separation problems, as required   |
|   |   | 4.5 | Identify upstream and downstream impacts of any adjustment made or variation in conditions   |
|   |   |     |  |
| 5 | Isolate and de-isolate plant                      | 5.1 | Isolate plant  |
|   |   | 5.2 | Make safe for required work  |
|   |   | 5.3 | Check plant is ready to be returned to service   |
|   |   | 5.4 | Prepare plant for return to service  |

## Required Skills and Knowledge

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

### Required skills

Required skills include:

- efficient and effective operation of plant/equipment
- 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
- applying mathematics to the level required by the job

### Required knowledge

Required knowledge of separation equipment principles and typical problems to a level needed to control the operation, includes:

- principles of operation of separation plant/equipment
- process parameters and limits (e.g. temperature, pressure, flow and pH)
- duty of care obligations
- hierarchy of control
- communication protocols (e.g. radio, phone, computer, paper and permissions/authorities)
- typical issues causing problems and the resolution of those problems
- routine problems, faults and their symptoms and the corrective action to be taken
- relevant alarms and actions
- plant process idiosyncrasies
- all items on a schematic of the plant item and the function/principles of operation, and problem solving of each
- physics and chemistry relevant to each unit and the processes used, including kinetic energy effects
- causes of head loss in piping systems, including comparison of fittings using Le/d concept, fluid and pipe material properties, flow geometry, and so on
- function and troubleshooting of major internal components and their problems, such as internals, supports, nozzles, grids, agitators or scrapers

- relevant environmental and heritage requirements
- mathematical formulae and their application to the job

## Evidence Guide

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.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Critical aspects for assessment and evidence are:

- early warning signs of equipment/processes needing attention or with potential problems are recognised
- the range of possible causes can be identified and analysed and the most likely cause determined
- appropriate action is taken to ensure a timely return to full performance
- obvious problems in related plant areas are recognised and an appropriate contribution made to their solution.

### **Context of and specific resources for assessment**

Assessment of this competency will occur over a range of situations which will include typical disruptions to normal, smooth operation. This will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability. Where safety, lack of opportunity or significant cost is an issue an industry-based simulation may be employed to assist the process.

### **Guidance information for assessment**

Assessment processes and techniques must be appropriate to the language, competency and safety requirements of the site and consistent with workplace systems or procedures.

## 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.

### **Context**

This competency includes all types of powered

separation equipment for gaseous, liquid and solids separation duties, including, but not limited to:

- centrifuges
- rotary dryers
- rotary vacuum filters
- flotation cells/columns
- thickeners/clarifiers

## **Procedures**

Procedures may be written, verbal, computer-based or in some other form. They may include, but are not limited to:

- all work instructions
- standard operating procedures
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant
- good operating practice as may be defined by industry codes of practice

Procedures would be expected to comply with any relevant government regulations.

## **Logs and reports**

Logs and reports may include:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action

## **Appropriate action**

Appropriate action includes, but is not limited to:

- determining problems needing action
- accessing and applying relevant technical and plant data
- applying appropriate problem solving techniques to determine possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility/ability to designated person

## **Typical problems**

Typical problems may include, but are not limited to:

- seal/gasket leaks
- pressure loss/low flow



- cartridge/filter change
- blockages/build-up/fouling
- erosion/wear
- separator driver problems

### **Remedial actions**

Remedial actions may include, but are not limited to:

- making adjustments to the equipment (e.g. flow and pressure)
- carrying out minor maintenance within operator's skill level
- identifying and reporting problems outside operator's scope of ability
- identifying and controlling hazards related to powered separation equipment and surrounding areas

### **Start up and shut down as required**

Start up and shut down as required includes:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- all other conditions experienced on the plant (i.e. from any condition to any condition experienced on the plant)

### **Health, safety and environment (HSE)**

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through State 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)**

**Unit Sector(s)**                      Operational/technical

### **Competency field**

## **Custom Content Section**

Not applicable.