



Australian Government

PMAOPS264A Operate solvent extraction equipment

Release 1

PMAOPS264A Operate solvent extraction equipment

Modification History

Release 1 – New unit

Unit Descriptor

This unit of competency covers the skills and knowledge needed to operate typical solvent extraction equipment as used in a metalliferous minerals processing plant. It also includes solving problems with solvent extraction processes and the equipment, including any ancillary equipment.

Application of the Unit

This unit applies to a person who has the responsibility for starting up, shutting down and operating solvent extraction equipment to procedures; and making adjustments to flow rate, pressure and temperature of solvent extraction 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 leaching equipment, which is instead covered by:

- *PMAOPS263A Operate leaching 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

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|---|--------------------------------------|-----|---|
| 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 solvent extraction plant/equipment |
| | | 1.7 | Complete any required pre-start checks |
| 2 | Operate solvent extraction equipment | 2.1 | Identify the type of solvent and solvent extraction equipment |
| | | 2.2 | Start up and shut down solvent extraction equipment according to the solvent extraction equipment type and duty |
| | | 2.3 | Adjust process variables as appropriate to type of solvent extraction equipment |
| | | 2.4 | Complete routine checks, logs and paperwork, taking appropriate action on unexpected readings and trends |

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| 3 | Operate ancillary equipment, as required | 3.1 | Monitor critical variables |
| | | 3.2 | Keep critical variables in range |
| | | 3.3 | Recognise trends/patterns which indicate a potential or actual problem with the equipment |
| | | 3.4 | Take appropriate action to ensure equipment is returned to full performance in a timely manner |
| 4 | Recognise problems and take appropriate action | 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 solvent extraction equipment and duty |
| | | 4.4 | Take other appropriate actions on solvent extraction problems |
| | | 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

Required knowledge

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

- principles of operation of solvent extraction plant/equipment
- process parameters and limits
- 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
- function and troubleshooting of major internal components and their problems, such as internals, supports, pumps or agitators
- relevant environmental and heritage requirements

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 solvent

extraction equipment, including, but not limited to:

- mixer/settlers
- organic treatment units

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

Ancillary equipment variables

Ancillary equipment variables may include, but are not limited to:

- temperature
- amps
- pressure
- vibration

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:

- process leaks
- variations in throughput or feed
- blockages/build-up/fouling
- erosion/wear
- driver problems

Remedial actions

Remedial actions may include, but are not limited to:

- making adjustments to the equipment
- 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 solvent extraction 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.

Work requirements

Work requirements may come from briefings, handovers and work orders and may include:

- compliance documentation
- product specifications
- nature and scope of tasks
- achievement targets
- operational conditions
- lighting conditions
- plant or equipment defects

- hazards and potential hazards
- coordination requirements or issues

Unit Sector(s)

Competency field Operational/technical

Unit sector

Custom Content Section

Not applicable.