



Australian Government

Department of Education, Employment and Workplace Relations

PMASUP244A Prepare and isolate plant

Release: 1

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Modification History

New unit

Unit Descriptor

This unit of competency covers the skills and knowledge needed to isolate and prepare plant for subsequent work, typically maintenance of some sort. It also includes preparing the plant for return to service.

Application of the Unit

This unit applies to a person who has the responsibility for isolating and preparing plant. This is probably part of their work role, although it could be a full time secondment for a major shutdown. The type of people to whom this unit may apply include (but are not limited to):

- operators, and maintainers
- maintenance personnel.

While this unit is written to apply to an individual they will usually undertake it in liaison with relevant experts and stakeholders.

This unit applies:

- after the isolation and preparation plan has been authorised
- before the work commences.

This unit has a strong relationship with the relevant 'permit' units (e.g. MSAPMPER200B Work in accordance with an issued permit and MSAPMPER300C Issue work permits) and decommissioning/recommissioning units (e.g. PMASUP440B Commission/recommission plant and PMASUP441C Decommission plant). Where relevant, these units should also be accessed.

This unit requires a detailed knowledge of the plant to be prepared and isolated, such as might be obtained from the relevant technical units covering this plant. Hands-on operating competency, however, is not necessarily required.

This unit does not include the planning for the isolation and preparation of plant - see PMASUP444A Plan plant preparation and isolation.

This unit has been written with the preparation and isolation of hazardous plant, such as a major hazard facility in mind. However, it should also be applicable to the preparation and isolation of lower hazard plants and mobile plant with appropriate contextualisation.

Much of this unit is iterative and the text below should not be taken as specifying necessary sequence.

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	Perform the isolations	1.1	Communicate with panel operator and other stakeholders
		1.2	Execute authorised isolation plan
		1.3	Remove materials and energy, as required
		1.4	Control any releases to the environment in accordance with plant procedures
		1.5	Prove the effectiveness of the isolation
		1.6	Decontaminate plant and equipment, as required
		1.7	Recognise and take appropriate action on any inconsistencies
		1.8	Test for residual hazards
		1.9	Complete required paperwork
		1.10	Sign off isolations, as required
		1.11	Hand over to/from shift, as required

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| 2 | Prepare plant for the work | 2.1 | Execute authorised preparation plan |
| | | 2.2 | Recognise and take appropriate action on any inconsistencies |
| | | 2.3 | Confirm plant is ready for the work |
| | | 2.4 | Hand over plant to the work party |
| | | 2.5 | Monitor work and plant, as required |
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| 3 | Prepare plant for return to service | 3.1 | Confirm work is complete and site/plant has been left in acceptable condition |
| | | 3.2 | Accept handover from work party |
| | | 3.3 | Obtain authority to deisolate |
| | | 3.4 | Execute authorised deisolation plan |
| | | 3.5 | Sign off the deisolation, as required |
| | | 3.6 | Reverse purge as required by plan for return to service |
| | | 3.7 | Execute authorised plan for return to service |
| | | 3.8 | Test as required |
| | | 3.9 | Advise plant is ready for service |
| | | 3.10 | Complete required paperwork |

Required Skills and Knowledge

Required skills include:

Ability to:

- read and interpret technical documentation and drawings/graphics
- interpret material safety data sheets (MSDS)
- interpret test results (e.g. for atmosphere/gas testing and leak testing)

Required knowledge includes:

Knowledge of:

- work control system for site and organisation
- existence of regulations and other external controls relevant to the proposed work
- isolation philosophy of organisation
- isolation and preparation plan for work
- plant energy sources and their methods of being de-energised and isolated
- hierarchy of isolations
- methods of proving isolations
- methods and equipment used for purging and ventilation
- physical properties of process materials (e.g. density and viscosity)
- hazardous properties of relevant materials (e.g. process, purging and ventilation materials)
- decontamination methods and requirements for various materials and situations
- as low as reasonably practicable (ALARP) concept
- importance of appropriate rates of change for pressure and temperature for vessels and other plant
- significance of time allowed for draining, purging, ventilation
- fluid dynamics relating specifically to draining piping systems:
 - the ability of a liquid to ‘hang-up’ in pipework, the importance of identifying high point vents to release gas/vapours and low point drains to release liquids
 - determining the amount of liquid drained from a piping section to ascertain that draining has been effective/prove drainage
- the potential effects (e.g. damage to tanks or vessels) of vacuum by not draining correctly (e.g. by pulling a vacuum behind a slug of liquid)
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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.

Overview of assessment	This unit should be assessed as holistically as is practical and will generally be assessed using a workplace project as a significant assessment activity.
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Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: - perform isolations to plan for a significant item of equipment or plant area - prepare plant for the work to plan - prepare plant for return to service to plan.
Context of and specific resources for assessment	Assessment of performance must be undertaken in a workplace. Access may be required to: - workplace procedures and plans relevant to work area - specifications and documentation relating to planned work - documentation relating to the plant, process and materials - the isolation and preparation plan - any other materials which would normally be available in the workplace while conducting this activity.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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.

Isolation	Isolation is a process for ensuring no energy or material can enter the isolated area
Plant energy sources	Plant energy sources may include, but are not limited to: - electricity (mains, solar and by generator) - chemicals and fuels

	• heat and steam • pneumatic pressure (compressed air, and other fluids under pressure, such as water or hydraulic oil) • energy storing devices, such as batteries, springs, flywheels, accumulators and capacitors • gravity (and its ability to cause items to fall) • radiation
Control releases	Controlling releases to the environment may include, but is not limited to: • preventing any release • containing any release • recovery and reuse or disposal of any release
Preparation	Preparation is a process for ensuring that plant and equipment is in a safe and appropriate condition for the required work. Preparation may include, but is not limited to: • draining • purging • inerting • ventilating • controlling atmosphere (e.g. to ensure it is breathable, and is not within the flammable range) • adjusting temperature to make a workable environment • adjusting pressure (usually to atmospheric) • ensuring adequate access and egress
Isolation plan	Execution of the isolation plan may include, but is not limited to: • confirming availability of plant, equipment and/or systems • verifying plant, equipment and/or systems • verifying isolation location • securing and identifying isolation points • labelling isolation points • doing the isolations • managing the isolations • managing lock out/tag out to procedure • cross checking isolations • undertaking self-isolation, where appropriate
Remove materials and energy	Removing materials and energy may include, but is

	not limited to: • draining, purging and venting of process materials • mitigation of stored energy • appropriately catching and disposing of any removed materials
Effectiveness of isolation	Proving the effectiveness of the isolation may include, but will not be limited to: • checking that any leaks are acceptable • proving depressuring • proving purging • checking bleed from double block and bleed, where appropriate • proving the atmosphere is as required • using gas detectors/meters • proving the isolation is effective • surveillance of isolations
Required paperwork	Required paperwork may include, but is not limited to: • isolation register • lock out/tag out register • required reports • required permits/work packs • filing of documentation Paperwork will conform to the site requirements and document control systems Paperwork may be: • paper, electronic or other approved form
Test as required	Testing of plant as required as part of preparation for return to service may include, but is not limited to: • pressure and leak testing • atmosphere/gas testing • testing the restoration of utilities and services

Unit Sector(s)

Support

Custom Content Section

Not applicable.