Australian Government

# PMASUP444 Plan plant preparation and isolation

**Release: 1**

# PMASUP444 Plan plant preparation and isolation

## Modification History

Release 1. Supersedes and is equivalent to PMASUP444A Plan plant preparation and isolation

## Application

This unit of competency covers the skills and knowledge required to plan and prepare for isolation of plant and its return to service. This unit of competency applies after the work scope has been agreed, but before the isolation and preparation commences.

Isolation is a process for ensuring no energy or material can enter the isolated area. Typically the isolation will occur so that the plant can be prepared for subsequent work, such as maintenance.

This unit of competency applies to senior technicians, operator/maintainers, maintenance planners, authorised permit issuers, and those in similar roles who are required to apply in-depth knowledge of process and plant in order to confirm the work to be done; plan the isolation and de-isolation strategies, preparations and sequencing; obtain authorities; liaise with stakeholders and complete documentation. The technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency. This competency may form part of their regular work role or could be a full-time role on secondment for a major shutdown.

This unit of competency applies to hazardous plant, such as a major hazard facility. However, with appropriate contextualisation it can be applied to the preparation and isolation of lower hazard plants and mobile plant.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

Nil

## Competency Field

Support

## Unit Sector

## Elements and Performance Criteria

| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. |
|---|---|

| | | | |
|---|---|---|---|
| 1 | **Confirm scope of work** | 1.1 | Examine identified work scope (e.g. what, where, who, when, why, duration and frequency) |
| | | 1.2 | Confirm purpose of identified work |
| | | 1.3 | Identify plant and equipment involved |
| | | 1.4 | Negotiate any conflicts/inconsistencies with relevant stakeholders |
| | | 1.5 | Identify possible need for temporary lifting of any isolations |
| 2 | **Develop isolation philosophy for work** | 2.1 | Apply relevant isolation philosophy/strategy, including type of/hierarchy of isolation and lock out/tag out |
| | | 2.2 | Determine implications of isolation |
| | | 2.3 | Identify physical limits of affected plant and equipment |
| | | 2.4 | Check suitability and effectiveness of existing isolation procedures |
| | | 2.5 | Assess possible boundaries for isolations |
| | | 2.6 | Seek local knowledge for similar isolations and preparations |
| | | 2.7 | Identify available/permissible preparation strategies, including purging fluids and techniques |
| | | 2.8 | Draft strategies for isolation and preparation |
| | | 2.9 | Communicate, as appropriate, with stakeholders |
| | | 2.10 | Negotiate isolation and preparation conflicts |
| | | 2.11 | Prepare isolation philosophy for work |
| 3 | **Manage hazards** | 3.1 | Identify existing hazards of plant, process and materials |
| | | 3.2 | Identify hazards associated with performing the isolations and preparation |
| | | 3.3 | Identify hazards associated with purging/flushing/venting materials |

| | | | |
|---|---|---|---|
| | | 3.4 | Draft strategies for controlling any releases |
| | | 3.5 | Estimate required preparation durations taking into account factors, such as starting conditions, safe rates of change (pressure, temperature), volumes and pressures required |
| | | 3.6 | Make recommendations for improvement in accordance with procedures |
| | | 3.7 | Liaise with technical experts as required |
| | | 3.8 | Specify types of isolations and locations of isolations required |
| | | 3.9 | Specify controls to bring hazards to 'as low as reasonably practicable' (ALARP) |
| 4 | **Plan required isolation and preparation** | 4.1 | Determine required sequencing of all steps |
| | | 4.2 | Develop isolation procedure |
| | | 4.3 | Develop preparation procedure |
| | | 4.4 | Develop decontamination procedures |
| | | 4.5 | Develop required procedures for plant supplementary systems |
| | | 4.6 | Verify procedures against relevant drawings and the plant |
| | | 4.7 | Identify and schedule required pre-work |
| | | 4.8 | Determine competencies required to complete planned isolations and preparation |
| | | 4.9 | Plan required de-isolation and preparation for return to service |
| | | 4.10 | Discuss proposed plans with relevant stakeholders |
| | | 4.11 | Complete required documentation |
| 5 | **Obtain authority to execute plan** | 5.1 | Obtain approval to implement the isolation and preparation plan |

5.2 Obtain approval to implement the de-isolation and preparation for return to service plan

5.3 Acquire hardware and resources for isolation and de-isolation and preparation for work and return to service

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

**Regulatory framework**

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- Government of Western Australia, Department of Commerce, Guidance note – Isolation of plant, 2010 (or similar state regulation)
- National Offshore Petroleum Safety Authority (NOPSA) requirements, where relevant
- Major Hazard Facility (MHF) Licence to operate, where relevant
- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

All operations to which this unit applies are subject to stringent health, safety and environment (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

**Hazards**

Hazards include one or more of the following:

- electricity
- gas (flammable, toxic and anoxic)
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

**Procedures**

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

**Determining competencies required**

Determining competencies required for isolation and preparation includes consideration of the need for skilled/qualified/licensed personnel in the areas of the following:

- electrical (normal)

- electrical high voltage and hazardous area
- electrical isolation/de-isolation
- radiation
- heights
- mobile plant
- plumbing
- mechanical fitting
- permit preparation

**Isolation procedures**

Isolation procedures include one or more of the following:

- isolation processes
- isolation list
- multiple isolations
- temporary lifting of isolations, when and if required
- interlocks
- and will include consideration of:
  - isolation alternatives
  - conflicts of isolation

**Verifying procedures**

Verifying procedures include one or more of the following:

- checking existing documents which have been used are accurate, current and complete
- checking planned isolation points do exist, are accessible, and are suitable for the isolation planned
- having a history of providing the isolation desired

**Relevant drawings**

Relevant drawings include one or more of the following:

- piping and instrumentation diagrams (P&IDs)
- process flow diagrams (PFDs)
- process flow sheets (PFSs)
- process engineering flow sheets (PEFs)

**Required pre-work**

Required pre-work includes one or more of the following:

- scaffolding
- building up/depletion of inventories/work in progress (WIP)
- obtaining of supplies
- identification tags
- lock out kits

**Required documentation**

Required documentation includes one or more of the following:

- drawings
- procedures
- marking up existing documents
- punch lists
- vendor documents/engineering specifications
- documentation required by the site work control system (e.g. permits)

Documents will conform to the site requirements and document control systems, and will be paper-based, electronic or in another approved form.

**Authority to execute**

Authority to execute includes both the authorisation to proceed and the timing of that execution. Authority will be obtained through the channels required by the organisation/facility.

The level of authority required will vary for different types of work, different types of isolation and different plants/facilities.

# Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP444A Plan plant preparation and isolation

# Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875