



**Australian Government**

# **PMAOPS402 Respond to abnormal process situations**

**Release: 1**

# PMAOPS402 Respond to abnormal process situations

## Modification History

Release 1. Supersedes and is equivalent to PMAOPS402A Respond to abnormal process situations

## Application

This unit of competency covers the skills and knowledge required to recognise and resolve abnormal process situations that are complex and/or not solvable by direct observation. The problem would normally impact an entire plant system or process. Examples include damage to/wear of tower trays, internal leaks of heat exchangers and collapse of/channelling in tower/column/vessel packing.

This unit of competency applies to senior technicians, para-professionals or those in similar roles who are required to apply in depth knowledge of process and plant in order to methodically investigate process, plant and technical problems, determine the cause and initiate corrective action.

This role is often performed using a small, usually ad hoc group, however, the person will take a lead technical role.

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

## Pre-requisite Unit

MSMSUP390 Use structured problem-solving tools

## Competency Field

Operations

## Unit Sector

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 **Recognise there is a problem**

1.1 Compare current performance with expected/historic performance

1.2 Identify plant/process areas with poor performance

- |   |                           |     |                                                                                            |
|---|---------------------------|-----|--------------------------------------------------------------------------------------------|
|   |                           | 1.3 | Check the impact of routine adjustments to improve performance                             |
|   |                           | 1.4 | Identify problems not solved by the routine solutions                                      |
| 2 | <b>Define the problem</b> | 2.1 | Apply problem isolation techniques to isolate problem to a small part of the plant/process |
|   |                           | 2.2 | Quantify the effect of the problem in operational terms                                    |
|   |                           | 2.3 | Postulate possible causes of the problem                                                   |
|   |                           | 2.4 | Identify types of evidence of each possible cause                                          |
|   |                           | 2.5 | Investigate problem to accumulate evidence of cause type                                   |
|   |                           | 2.6 | Analyse data to confirm cause of problem                                                   |
|   |                           | 2.7 | Determine the level of severity of the problem and priority of any required action         |
| 3 | <b>Develop solution</b>   | 3.1 | Discuss possible solutions to cause with stakeholders and technical experts                |
|   |                           | 3.2 | Determine whether a quick fix is needed                                                    |
|   |                           | 3.3 | Arrange for implementation of quick fix if required                                        |
|   |                           | 3.4 | Check effectiveness of quick fix and take action to maintain stable, safe operation        |
|   |                           | 3.5 | Agree required final solution with stakeholders and technical experts                      |
|   |                           | 3.6 | Arrange for required solution to be undertaken in appropriate timeframe                    |
|   |                           | 3.7 | Follow items initiated through until final resolution has occurred                         |
|   |                           | 3.8 | Check effectiveness of solution and take action to maintain or improve outcome             |
|   |                           | 3.9 | Complete reports to procedure                                                              |

## 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:

- 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.

**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

**Problem isolation**

Problem isolation uses techniques to isolate the cause of the problem to a specific part of the process or unit operation and uses techniques including one or more of the following:

- flow charts
- process logic/process requirements
- cause and effect diagrams/charts
- divide and conquer
- control charts, run charts (Shewhart charts)
- similarity/difference analysis
- other structured processes defined by the organisation

**Problem analysis**

Problem analysis identifies possible causes and examines the evidence for each cause and uses techniques including one or more of the following:

- Ishikawa/fishbone diagrams/
- logic tree
- histograms/Pareto analysis
- scatter grams
- brainstorming
- control charts, run charts (Shewhart charts)
- 6 Hats (Edward de Bono)
- other structured processes defined by the organisation

## Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS402A Respond to abnormal process situations

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>

# Assessment Requirements for PMAOPS402 Respond to abnormal process situations

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## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include the ability to:

- recognise signs of variations of plant and process that indicate different types of problems
- select and apply problem isolation and analysis techniques to determine the most likely cause of problem
- determine and initiate any immediate corrective action (quick fix) required
- determine and initiate longer term solution
- communicate and negotiate effectively with all stakeholders
- follow through to ensure resolution of problems
- undertake calculations.

## Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- principles of operation and process science for all unit operations within the system/area and the interrelationships between them
- cause/effect relationships between plant/process condition and process variable values
- indicators of abnormal process situations, and evidence of which cause is responsible for the abnormal situation
- impact of variations in plant and process and the distinctive signs of each variation (e.g. lower quality, lower rates, greater variability or greater difficulty in control).

## Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- Where competency has not been previously attained in *MSMSUP390 Use structured problem-solving tools* it may be co-delivered and co-assessed.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.

- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills, or a real project in an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on-the-job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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