



Australian Government

PMASUP445 Participate in HAZOP studies

Release: 1

PMASUP445 Participate in HAZOP studies

Modification History

Release 1. Supersedes and is equivalent to PMASUP445A Participate in HAZOP studies

Application

This unit of competency covers the skills and knowledge required to participate in hazard and operability studies (HAZOP).

HAZOP is a systematic method for examining complex facilities or processes to identify actual or potentially hazardous procedures and operating issues within the design, construction and commissioning of equipment and plant so that they may be eliminated or mitigated. Typically a multi-disciplinary team comprising operators, engineers, safety and other personnel will review a change in plant, process or equipment to see if the change can cause unforeseen hazards or introduce unexpected operability problems and confirm that the change meets the standards.

This unit of competency applies to senior technicians and those in similar roles who are required to apply in-depth knowledge of process and plant in order to review piping and instrumentation diagrams (P&IDs) or similar in relation to a proposed change, identify possible hazards or operability issues, recommend amendments to improve safety and operability of the change, and review and amend procedures in relation to the change.

This unit of competency applies to an individual who is part of a multi-disciplinary HAZOP team. At all times they would be liaising and cooperating with members of the team.

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

Pre-requisite Unit

PMAOPS280 Interpret process plant schematics

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.

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|---|--|--|
| 1 | Prepare for HAZOP study | <div>1.1 Explain the purpose of the HAZOP study</div> <div>1.2 Review the key steps in undertaking the HAZOP study</div> <div>1.3 Review the HAZOP tools to be used</div> |
| 2 | Participate in a HAZOP study | <div>2.1 Identify the purpose and operation of the new/modified equipment/process</div> <div>2.2 Determine the normal operating conditions, method of operation and associated equipment and componentry of proposed change</div> <div>2.3 Review relevant information to assist in the identification of possible problems</div> <div>2.4 Process available information to identify potential hazards or operability issues</div> <div>2.5 Identify potential hazards or operability issues and possible consequences utilising key words</div> <div>2.6 Assess the risks arising from identified potential hazards or operability issues</div> <div>2.7 Identify items needing further action</div> <div>2.8 Review relevant operating and safety procedures</div> <div>2.9 Recommend possible solutions to minimise risk of proposed change</div> |
| 3 | Complete delegated actions within scope of responsibility | <div>3.1 Perform delegated actions within area of responsibility</div> <div>3.2 Follow initiated items through until final resolution has occurred</div> <div>3.3 Identify problems needing further action</div> <div>3.4 Determine possible fault causes within area of responsibility</div> <div>3.5 Report outcomes to designated person</div> |

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.

Hazards Hazards identified are situations/conditions which may lead to an incident or make operation difficult and will arise from consideration of key words.

Sources of information Sources of information include, as appropriate to the proposed change:

- provisional layouts
- safety data sheets (SDS)
- process drawings (e.g. P&IDs, process flow diagrams (PFDs), and cause and effect)
- plant model
- equipment arrangement drawings
- provisional operating instructions/procedures
- plant operating procedures
- logic diagrams
- equipment reference manuals
- hazardous area layouts
- start-up and shutdown emergency procedures
- access to plant and equipment

Delegated action Delegated actions arising from HAZOP study include one or more of the following:

- review of plant operating procedures
- undertaking additional tasks from action list HAZOP report
- attendance at HAZOP review meetings
- recording results from additional tasks

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMASUP445A Participate in HAZOP studies

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 PMASUP445 Participate in HAZOP studies

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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:

- analyse schematics and other sources of information to identify actual and/or potential hazards and recognise conditions that might lead to operability issues
- utilise key words in the identification of potential hazards or operability issues
- identify possible consequences and assess risks from identified potential hazards and operability issues
- recommend possible solutions
- complete actions delegated from the HAZOP
- communicate effectively with multi-disciplinary stakeholders.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the architecture and location of the process/production equipment
- specific plant process operations
- interactions between plant items/processes
- product specifications and tolerances
- systems operating parameters
- system integrity limits
- process control philosophies and strategies
- emergency shutdown procedures
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials
- impact of external factors (e.g. variations in weather and feed)
- process drawings (e.g. piping and instrumentation diagrams (P&IDs), process flow diagrams (PFDs), and cause and effect)
- basis of control for the plant/s
- instrumentation and control systems, components and loops as they relate to the modification under review
- impacts of changing process/production equipment settings and the limits within which changes can be made
- organisation procedures
- work health and safety (WHS), hazardous substances and environmental requirements

- enterprise standard operating procedures, plant processes and equipment for area under review
- duty of care obligations
- hierarchy of control.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- 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 real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- 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.
- 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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