



Australian Government

PMAOPS226 Monitor and operate flare systems

Release: 1

PMAOPS226 Monitor and operate flare systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS226A Monitor and operate flare systems

Application

This unit of competency covers the skills and knowledge required to monitor and operate flare systems.

The flare system may be an elevated flare, ground flare or vent (sometimes called ‘cold flare’). The flare system includes all items from the safety relief device through to the flare inclusive.

This unit of competency applies to operators who, as part of their duties, are required to monitor flare systems, start up and shut down according to procedures, identify problems with flare systems and take appropriate action.

This unit of competency applies to an individual who may work alone although under the routine direction and supervision of a person who is competent to undertake the complete operation of the plant/plant area. They may work as part of a team or group and will work in liaison with other shift team members and the control room operator, as appropriate.

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

Pre-requisite Unit

Nil

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.

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|---|-----------------------------|-----|---|
| 1 | Monitor flare system | 1.1 | Identify and control flare system hazards |
| | | 1.2 | Visually inspect the flare and flare system components for compliance to requirements |
| | | 1.3 | Take relevant readings |

- 1.4 Check for process causes of identified problems
 - 1.5 Check for other causes of identified problems
 - 1.6 Take actions specified in the procedures
 - 1.7 Complete logs as required
- 2 **Shut down flare system**
 - 2.1 Obtain required authorisations for a flare shutdown
 - 2.2 Notify other relevant plants/units of planned shutdown
 - 2.3 Identify and control flare shutdown hazards
 - 2.4 Purge and isolate flare system
 - 2.5 Complete other preparations for flare shutdown according to procedures
 - 2.6 Shut down according to procedures
- 3 **Start up flare system**
 - 3.1 Check all required work has been completed
 - 3.2 Check integrity of components
 - 3.3 Notify other relevant plants/units of planned start-up
 - 3.4 Identify and control flare start-up hazards
 - 3.5 De-isolate and purge flare system
 - 3.6 Complete other preparations for flare start-up according to procedures
 - 3.7 Start up flare system according to procedures
- 4 **Solve flare system problems**
 - 4.1 Recognise and respond to abnormal conditions
 - 4.2 Identify other problems in flare system
 - 4.3 Take action to remedy flare problems in accordance with procedures
 - 4.4 Communicate relevant information

4.5 Complete required documentation

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, and 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

Routine problems

Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of the following:

- iced lines
- high levels in pots/vessels
- smoke from flare
- flame out
- lack of header purge flow
- flash back
- inconsistent header composition
- blockage
- cold feed to warm header

Known solutions are drawn from one or more of the following:

- procedures
- training
- remembered experience

Non-routine problems must be reported according to according to relevant procedures.

Abnormal conditions

Abnormal conditions include one or more of the following:

- weather
- loss of pilot fuel
- loss of utilities
- flame out
- high flare system back pressure
- cross connection between dissimilar systems

Responding to abnormal conditions

Responding to abnormal conditions includes the following:

- 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 resolve to designated person

Flare system The flare system includes one or more of the following:

- elevated flare
- ground flare
- vents (sometimes called ‘cold flare’)

The flare system includes all items from the safety relief device through to the flare inclusive.

Hazards Hazards include one or more of the following:

- access and exclusion zone
- heat
- blow backs
- leaks/loss of containment (LOC)
- ineffective isolations
- inadequate ventilation
- air ingress
- liquid carryover
- high liquid levels in knock out pots/separation vessels
- contraction and expansion (cold vapours)
- dislodgement of burning coke
- noise
- cryogenic temperatures
- radiation
- liquid hammer

Visual inspection As relevant to the type of flare, visual inspection includes one or more of the following:

- pilot flame condition
- burn pattern
- ice on header lines
- vessel levels

- damage or deterioration
- smoke density

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic based
- verbal/radio reports
- reporting items found which require action

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS226A Monitor and operate flare systems

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 PMAOPS226 Monitor and operate flare systems

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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:

- monitor and inspect flare systems
- shut down/start up flare systems according to procedures
- recognise conditions which indicate a problem and take appropriate action
- convey information relevant to the operation clearly and effectively.

Knowledge Evidence

- Evidence must be provided that demonstrates knowledge of:
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls
- flare system operating principles, requirements and parameters
- routine problems, faults and their symptoms and the corrective action to be taken
- knock on/escalation potential
- process materials likely to be flared and the conditions which will lead to flaring
- relevant environmental requirements
- significance of the exclusion zone

flare start-up, re-ignition and shutdown procedures.

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:
 - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
 - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency

- must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start-up and shutdown procedures and responding to problems
- may use industry-based simulation for part only of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in 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.
- Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - pilot plant operation
 - demonstration of skills
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) 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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