



Australian Government

PMAOPS344 Operate and troubleshoot flare systems

Release: 1

PMAOPS344 Operate and troubleshoot flare systems

Modification History

Release 1. This version was released with PMA Chemical, Hydrocarbons and Refining Training Package, Release 2.0.

Application

This unit of competency describes the skills and knowledge required to operate a flare system. This may involve operational work undertaken during normal operation, abnormal situation management, and the preparations undertaken for both flare equipment maintenance and reinstatement after maintenance.

The flare system must be an integrated flare system that is managed by a control room, and cannot be a simple ground flare or vent. 'Flare system' includes all items from the safety relief device through to the flare inclusive.

This unit of competency applies to autonomous operators who may work alone or as part of a team or group, reporting back to a control-room operator.

No licensing, legislative or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Operate flare system in accordance with procedures	1.1 Receive and give shift handover 1.2 Identify type of flare system and duty/standby status of relevant equipment 1.3 Monitor flare system frequently and critically throughout shift using own senses, and measured and indicated data 1.4 Ensure the flare system is running within stated operational

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	tolerances as requested by the control room operator
2. Identify and respond to abnormal situations	2.1 Identify problems within the flare system and problems in other units that will impact flare system operation 2.2 Take action to remedy abnormal flare situations in according to operating procedures, and as required by control room 2.3 Verify the asset integrity of all flare equipment and respond to integrity breaches according to operating procedures 2.4 Maintain appropriate communication with control-room operator during abnormal flare situations 2.5 Assess flare incidents and notify appropriate personnel of the incident according to operating procedures 2.6 Complete required documents outlining abnormal flare situation management including corrective action taken
3. Shutdown and prepare flare system for maintenance	3.1 Identify maintenance scope from workplace documentation 3.2 Prepare flare system for duty changeover according to operating procedures 3.3 Maintain appropriate communication with control-room operator during flare system duty changeover 3.4 Identify, control and report shutdown hazards 3.5 Isolate flare systems and utilities from operating sources according to operating procedures 3.6 Leave the shutdown flare system in a safe state for handover to maintenance
4. Prepare and start up flare system	4.1 Check that any maintenance or other performed work has been completed 4.2 De-isolate flare system equipment according to operating procedures 4.3 Complete flare system pre-start checks according to operating procedures 4.4 Identify, control and report startup hazards 4.5 Maintain appropriate communication with control-room operator during the flare startup

Foundation Skills

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

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. New Unit.

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 PMAOPS344 Operate and troubleshoot flare systems

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- at least 2 times, each in a separate work context.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- physical plant and equipment including:
 - all items on flare system schematics and the function of each
 - flare equipment terminology
- policies and procedures including:
 - where to locate latest version of workplace maintenance documents and procedures
 - required preparation and permits for different types of work to be done on the flare unit or its component items
 - isolation requirements
 - role within permit system when taking flare custody back from maintenance
 - de-isolation principles
- operating parameters including:
 - basic flare-specific physics and chemistry relevant to operation of the flare system equipment and of the relevant upstream processes, to the level of being able to interpret the science and extract factors controlling the flare operation:
 - smokeless combustion
 - negative pressures after flaring hot vapours
 - Joule–Thompson effect
 - air ingress
- flare duty of care obligations
- key operating principles of flare equipment and associated ancillary equipment
- flare safe operating envelope for relevant process variables
- interactions between plant items/processes and the flare
- factors affecting efficient operation of the equipment
- specific key alarms and appropriate actions
- impact of external factors including variations in weather and feed

- the following signs of flare unit upset and corrective actions
 - high level or low level in knockout drum
 - icing up of flare lines or valves
 - low flare header pressure
 - loss of pilot gas or minimal gas flow
 - oxygen alarm
 - flame sensor alarm
 - black smoke – understanding the Ringelmann scale
 - extinguished pilot burners
 - flare height and noise levels
 - pulsing flame – relief valve chattering
- flare integrity limits, regulatory specifications and tolerances
- function and basic troubleshooting of major internal components
- the advantages and disadvantages of changing each of the variables during flare operational upsets
- correct methods of changing duty of flare equipment
- correct methods of reinstating and starting flare systems
- risk management including:
 - key safety systems and relevant procedures
 - knock on and escalation potential from process upsets and actions
 - emergency shutdown procedures and communication protocols
 - locations of muster points, spill kits, emergency response beacons and equipment relevant to the flare system
 - incident response role requirements within site safety management plan
 - appropriate application of hierarchy of control measures to control risks
- flare system hazards:
 - possible causes
 - potential consequences
 - appropriate risk controls
 - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - flare systems
 - operating procedures
- abnormal situations must be relevant to flare operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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