



Australian Government

PMAOPS331 Operate and troubleshoot gas turbine system

Release: 1

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Modification History

Release 1. Unit code changed and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS324 Operate a gas turbine.

Application

This unit describes the skills and knowledge required to operate a complex, independent gas turbine system in a power generation, compression or similar operation. Typically, it will have a specialised startup and shutdown procedure. It may have its own control panel and inbuilt vibration monitoring equipment.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit applies to an individual working alone or as part of a team or group, and working in liaison with other shift team members and the control-room operator, as appropriate.

Some jurisdictions may require the holder of this unit to be licensed or certified; learners should check with the relevant authorities. 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 gas turbine system according to procedure	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report process system hazards

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.4 Check for recent work undertaken on gas turbine and address outstanding and incomplete work 1.5 Check operational status of process system 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust process system according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor gas turbine system frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare gas turbine system for maintenance	3.1 Prepare process system to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down process system according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations that may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate process system from energy sources
4. Prepare and start gas turbine system	4.1 De-isolate and prepare process system to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up process system according to operating procedures

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.4 Identify, control and report startup hazards 4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

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. Supersedes and is equivalent to PMAOPS324 Operate a gas turbine.

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 PMAOPS331 Operate and troubleshoot gas turbine system

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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:

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

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the gas turbine system, including:
 - turbine operating principles including fuel injection, lubrication, cooling, ignition, induction and exhaust power supply
 - interactions between plant items and processes
 - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
 - procedures for starting, stopping, operating, controlling and isolating system
 - emergency shutdown procedures
 - functions of major components and troubleshooting techniques
- physics and chemistry to the level of being able to provide an overview of the science of the gas turbine process and product
- basic science of upstream and downstream processes
- gas turbine system abnormal situations and required actions, including but not limited to:
 - variation in power or fuel supply
 - vibration
 - overheating
 - fouling of turbine/engine/exchangers
 - lubrication quality
 - ancillary equipment failures
- hierarchy of control
- gas turbine 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:
 - gas turbine system
 - operating procedures
- abnormal situations must be relevant to gas turbine systems.

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

Links

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