Australian Government

PMAOPS305 Operate process control systems

Release: 1

PMAOPS305 Operate process control systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS305B Operate process control systems

Application

This unit of competency covers the skills and knowledge required to operate and monitor the plant using a centralised control panel, such as distributed control system (DCS) type controls. The panel controls multiple vessels/plant items and or products. It will typically be located on-site but off plant in a control room, but may also be off-site.

This unit of competency applies to operations technicians who have overall responsibility for the operation of all units of equipment covered by the control system/portion of the control system they operate. They are required to identify, correct and report operational problems, operate, monitor and maintain equipment using relevant procedures, take appropriate action following an alarm or out-of-specification condition developing, and contribute to safe operations.

The control system will typically use a range of control algorithms and multiple control loops. The control system may include other local controllers which are integral to its operation.

This unit of competency applies to an individual operating as part of a team during start-up, shutdown and normal operating conditions. They would take a leading role in liaising and cooperating with other members of the team, including 'outside operators'. However, this unit does not preclude the situation where the panel operator may also undertake 'outside' functions.

The operations technician is expected to be capable of performing all parts of this unit of competency.

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 Performance criteria describe the performance needed to

essential outcomes.		demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on plant units being controlled
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of plant units being controlled
2	**Use operator interface**	2.1	Use human interface devices to access control system/panel
		2.2	Monitor the process using the operator interfaces
		2.3	Select appropriate controller modes
		2.4	Access historical data and information
		2.5	Acknowledge messages and alarms
3	**Access control information**	3.1	Obtain relevant data and information from the control system by applying systems knowledge
		3.2	Identify the status of individual pieces of equipment from the control panel and use information to identify potential faults
		3.3	Minimise fluctuations and variations in process through the interpretation of existing trends and control schematics
		3.4	Record process variations/irregularities to procedures
4	**Control process variations and**	4.1	Use historical data to assist the identification of problems

	monitor operations	4.2	Process available information to identify potential faults
		4.3	Undertake required set point/output changes to meet plant and process requirements
		4.4	Optimise plant operating conditions in accordance with guidelines
		4.5	Adjust production in response to test results and control panel information
		4.6	Monitor key process and environmental variables and take appropriate action
		4.7	Adjust controller settings in accordance with procedures
		4.8	Use fine tuning software as appropriate.
		4.9	Coordinate with upstream and downstream units as appropriate
		4.10	Record adjustments and variations to specifications/schedules
		4.11	Communicate to appropriate personnel as required
5	**Facilitate planned and unplanned process start-ups and shutdowns**	5.1	Select and apply procedures to planned start-up and shutdown processes
		5.2	Select and apply procedures to unplanned shutdown processes
		5.3	Implement all required emergency responses
		5.4	Communicate necessary information to all personnel affected by events
		5.5	Log all required information
6	**Respond to alarms or out of specification conditions**	6.1	Identify system(s) affected by the alarm or condition
		6.2	Interpret alarms and prioritise actions to be taken
		6.3	Take appropriate action to respond to the alarm or incident

6.4 Deal with any out-of-specification material in accordance with procedures

6.5 Communicate the problem/solution to appropriate personnel

6.6 Record the information as required

6.7 Provide details of the alarm and action taken to the next shift at changeover

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.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems are unexpected problems, or variations of previous problems and include one or more of the following:

- loss of power/utilities
- variation in feed rate, quality or loss of feed
- unstable control of pressure, temperature, level and/or flows
- unstable/suboptimal operation
- control equipment failure
- process plant trips
- change in atmospheric conditions (rain, temperature, wind and lightning)

- emergency situations

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

Human interface devices

Human interface devices include one or more of the following:

- keyboards
- track ball/mouse
- touch screen
- monitor and/or
- standalone controllers

Alarms or abnormal conditions

Alarms or other abnormal conditions include the following:

- emergency, including emergency shut down
- partial or complete controller failure

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from all other conditions experienced on the plant (i.e. from any condition to any condition experienced on the plant)

Operate

Operate is to monitor, adjust/change the plant item/unit/system to meet specifications, by the following:

- using the process control system in the control room

This competency does not require operation other than through the control panel.

Product Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875