



Australian Government

Department of Education, Employment and Workplace Relations

PMAOPS522A Coordinate plant shut down

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competence applies to a plant technician who is performing the plant shutdown coordinator role as their primary activity. This is for a planned plant shutdown for maintenance or process activities. The technician will be implementing/executing the shutdown plan rather than developing the shutdown plan. This technician would be part of a team working with technical experts, maintenance experts, contractor representatives, process/production teams and management.
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Application of the Unit

Application of the unit	In a typical scenario a complex and integrated plant needs to be shut down for planned maintenance, integrity inspections or process activities. This may be an entire plant/site, or a significant plant/area within that. This requires the coordination of a number of work groups and resources to ensure safe and efficient preparing of equipment for handover to maintenance, contractor or process for shut down activities. This competency does not cover the technician actually shutting down the plant (see <i>PMAOPS411B Manage Plant shutdown and restart</i>) or with the shutdown planning from initial scoping (see <i>PMAOPS521C Plan Plant shutdown</i>) Key aspects of the competency include: • coordinating shutdown sequence to ensure all process shutdown activities completed to schedule • communicating shutdown and equipment preparation activities to all stakeholders in a timely manner • a comprehensive knowledge of plant shutdown events and their impact on upstream and down stream interfaces • efficient identification and utilisation of available resources • effective coordination of a number of teams performing a number activities simultaneously • analyse/problem solve and develop contingencies plans to safely manage • identify and coordinate pre shutdown preparation requirements
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	
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Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify shutdown work scope	1.1. Analyse relevant information for activities intended for the shutdown 1.2. Complete a list of all activities intended for shutdown 1.3. Prioritise list and identify all essential work 1.4. Identify conflicts between proposed activities
2. Plan and schedule resources	2.1. Identify each individual task in the shutdown process 2.2. Determine resources required for each task and assign appropriate owner 2.3. Determine prerequisite tasks prior to shutting down process 2.4. Ensure hazards are identified and controls are in place 2.5. Ensure all safety and testing equipment is calibrated and on site prior to shutdown commencing 2.6. Compile a schedule to track shutdown and equipment preparation sequence
3. Co-ordinate plant/ equipment shutdown sequence	3.1. Prepare/review shutdown documentation 3.2. Coordinate plant shutdown as per procedures 3.3. Track plant shutdown progress. 3.4. Coordinate execution of critical function test during shut down phase 3.5. Coordinate equipment preparation 3.6. Validate equipment is safe to handover to appropriate work party.
4. Handover plant/ equipment to relevant work party	4.1. Handover plant and equipment to relevant work group per site protocol 4.2. Perform safety audits during shutdown work 4.3. Record/report HSE non conformance 4.4. Communicate as and when required 4.5. Monitor shutdown work against critical path 4.6. Monitor resource usage and take appropriate action 4.7. Identify barriers to achieving shutdown critical path and negotiate solution.
5. Communicate with all relevant stakeholders	5.1. Communicate shutdown plan/schedule to operations team 5.2. Attend and contribute to regular shutdown progress

ELEMENT	PERFORMANCE CRITERIA
	meetings 5.3. Record and report daily shutdown activities. 5.4. Ensure all authorisations required for tasks have been obtained 5.5. Identify, communicate and manage HSE issues arising during execution of shut down activities 5.6. Contribute to post shutdown review.
6. Return plant to service	6.1. Confirm that all scheduled work on equipment is complete before hand back is accepted 6.2. Ensure equipment hand back documentation complete per site protocol 6.3. Coordinate pre-start equipment integrity checks 6.4. Coordinate and validate plant de-isolation and preparation for service 6.5. Ensure appropriate plant start up authority is obtained 6.6. Coordinate start up critical function tests as required 6.7. Coordinate and record plant start up progress

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

Competence also includes the ability to:

- interpret shutdown schedule/planning tools (eg Gant chart, MS project, Primavera)
- identify and manage HSE risks using appropriate tools (eg HAZOPS, JHA)
- coordinate a number of tasks simultaneously
- apply legislative requirements and company policies and procedure
- solve problems
- monitor and coordinate resource requirements
- communicate
- write or review and apply documentation
- lead teams
- undertake structured analysis of shutdown activities before and during the shutdown

Required knowledge

Competence in this unit includes the following knowledge:

- detailed principles of operation of the plant involved in the shut down
- overview of the principles of operation of and any upstream and downstream processes
- HSE impact of any shutdown
- plant/equipment/processes impacted by the shutdown
- safe working practices related to the type of plant and equipment being shut down and worked on
- interpretation of work scope and identification of conflicts
- analysis of planned sequences of events to identify possible conflicts
- organisation computer applications (eg those used to track/record shutdown schedule)
- interpret complicated P&IDs, PFDs, etc.

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency.

Typically this unit will be assessed by a shutdown planning project. As shutdowns may not occur with sufficient frequency or planning to allow for assessment of all elements, performance criteria, required skills and knowledge, simulation may be required to assess some aspects of this competency.

This unit of competency requires a significant body of knowledge, which will be assessed through questioning and the use of what if scenarios both on the plant (during demonstration of normal operations and walk throughs of abnormal operations) and off the plant.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Competence must be demonstrated in the ability to undertake a structured analysis of the activities to be completed during the shutdown and then undertaking the coordination in a systematic manner.

Consistent performance should be demonstrated, in the following:

- in-depth analysis of all proposed shut down activities to eliminate conflicts and minimise the shutdown critical path
- resource management maximises pre shutdown preparations to minimise interruptions to the critical path
- coordinate shutdown team to ensure safe and efficient plant shutdown and preparation per procedures without incident.
- coordinate track shutdown activities to ensure critical path milestones are reached per plan
- contingencies are developed to overcome unforeseen barriers to plan

EVIDENCE GUIDE	
	record and report all aspects of shutdown activities to stakeholders per enterprise protocol
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions, which will be used to probe the reasoning behind the observable actions
Method of assessment	Typically this unit will be assessed by performing a shutdown coordination project. Assessment should be evidence based through direct observation and the compilation of an evidence portfolio to support the Elements, Performance Criteria, Skills and Knowledge requirements of this competency It may be appropriate to assess this unit concurrently with other relevant units
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicized wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations, which are covered by the shutdown. Where only a plant area is being shut (or one plant in an integrated complex), it also includes the impact of the shut on those areas still operating.
Reason for shut down	The reason for plant shut down may include: - planned shutdown for regulatory vessel inspections - major maintenance - catalyst or column regeneration/repacking - other activities requiring plant shutdown to access
Organisation systems	Organisation systems applications/data bases may include: - MAXIMO/SAP or other relevant work management tool as appropriate for area of responsibility - Scheduling tools such as MS Project, Excel, Gant Chart, Primavera or similar - other electronic recording / reporting software systems - paper based reports/record systems
Hazard identification tools	Hazard Identification tools may include but not be limited to: - hazard and operability studies (HAZOP) - hazard analysis studies (HAZAN) - job hazard/safety analysis (JHA/JSA) - safe work method statements (SWMS) - risk matrix
Activities intended for shutdown	Activities intended for shutdown may come from: - maintenance planning - process/production records - other sources
Resources required for task	Resources required for task include: time

RANGE STATEMENT	
	• people • material • other
Resource requirements	Resource requirements may include but not limited to: • utility services such as steam, nitrogen, power, water, chemicals • workforce such as operators, maintenance, contractors, engineers, laboratory staff, safety observer, standby rescue crew • mobile equipment such as elevated work platforms, Hiab, vacuum trucks, drip trays • other equipment such as hoses, plugs and caps, scaffold, extra fire protection equipment
Shut down documentation	Shut down documentation include: • procedures • packages • isolation lists • blinds list • punch lists
Equipment preparation	Equipment preparation includes: • isolation • blinding/spading • purging • ventilation • washing
Communication	Communication includes: • preparations • overnight activities • progress • problems • potential delays
Health Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State 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.

Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		
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