



Australian Government

PMAOPS320 Conduct artificial lift

Release: 1

PMAOPS320 Conduct artificial lift

Modification History

Release 1. Supersedes and is equivalent to PMAOPS320B Conduct artificial lift

Application

This unit of competency covers the skills and knowledge required to control the artificial lift of fluids from operating wells either on land or off-shore using pumps, valves and compressors. Fluids may be oil, condensate, gas or water.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to conduct tests and analyses of the product and the operating condition of the equipment, monitor production, identify and rectify operational problems, facilitate output changes and transfer product to storage.

This unit includes all such items of equipment and unit operations which form part of the wellhead system. A unit comprises two or more components of plant/equipment that are operated together to produce product, including as appropriate to the facility:

- gas lifts
- down hole pumps and other pumps
- valves and other production equipment
- flow/pressure test equipment.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls. In the case of large complex plant, the operations technician would be part of a team during start-up and shutdown procedures.

This unit of competency 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.

This unit of competency does not require the operation of a central control panel.

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 | 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 artificial lift equipment |
| | | 1.6 | Note any outstanding/incomplete work |
| | | 1.7 | Check operational status of artificial lift equipment |
| | | | |
| 2 | Produce product | 2.1 | Operate lifting process in accordance with local lease and lease equipment requirements and constraints |
| | | 2.2 | Operate pumps, valves and other production equipment to transfer product/fluid from well to surface |
| | | 2.3 | Test production equipment to ensure correct operating efficiencies are maintained |
| | | 2.4 | Monitor operating parameters such as temperature and pressure of valves, pumps and other production equipment |
| | | 2.5 | Diagnose operational faults during the production phase |
| | | 2.6 | Take action required by procedures |

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| 3 | Monitor product/volume efficiencies | <table border="0"><tr><td>3.1</td><td>Monitor lift equipment and its component plant items frequently and critically throughout shift using measured/indicated data and senses</td></tr><tr><td>3.2</td><td>Monitor fluid produced by testing and analysing product flow temperatures, pressures and fluid volumes</td></tr><tr><td>3.3</td><td>Evaluate the production efficiencies of the well</td></tr><tr><td>3.4</td><td>Describe impacts of any changes upstream and downstream</td></tr><tr><td>3.5</td><td>Recognise actual and developing situations which may require action</td></tr><tr><td>3.6</td><td>Apply operational knowledge to resolve problems</td></tr><tr><td>3.7</td><td>Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation</td></tr><tr><td>3.8</td><td>Follow through items initiated until final resolution has occurred</td></tr></table> | 3.1 | Monitor lift equipment and its component plant items frequently and critically throughout shift using measured/indicated data and senses | 3.2 | Monitor fluid produced by testing and analysing product flow temperatures, pressures and fluid volumes | 3.3 | Evaluate the production efficiencies of the well | 3.4 | Describe impacts of any changes upstream and downstream | 3.5 | Recognise actual and developing situations which may require action | 3.6 | Apply operational knowledge to resolve problems | 3.7 | Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation | 3.8 | Follow through items initiated until final resolution has occurred |
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| 4 | Transfer product to storage | <table border="0"><tr><td>4.1</td><td>Maintain records and reports showing a history of the production capacities of the well and a record of any deviations which have occurred</td></tr><tr><td>4.2</td><td>Communicate transfer of the product to all appropriate support groups and work groups downstream of the well</td></tr><tr><td>4.3</td><td>Select an appropriate medium for safe transfer of the product to the next phase in the product process</td></tr><tr><td>4.4</td><td>Observe and act upon all environmental conditions and legislative requirements to ensure the protection of the working environment is maintained during product transfer</td></tr><tr><td>4.5</td><td>Monitor transfer and take action required by procedures</td></tr></table> | 4.1 | Maintain records and reports showing a history of the production capacities of the well and a record of any deviations which have occurred | 4.2 | Communicate transfer of the product to all appropriate support groups and work groups downstream of the well | 4.3 | Select an appropriate medium for safe transfer of the product to the next phase in the product process | 4.4 | Observe and act upon all environmental conditions and legislative requirements to ensure the protection of the working environment is maintained during product transfer | 4.5 | Monitor transfer and take action required by procedures | | | | | | |
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| 5 | Isolate and de-isolate plant | <table border="0"><tr><td>5.1</td><td>Complete any required pre-start checks</td></tr><tr><td>5.2</td><td>Start up/shut down lifting equipment according to the equipment type and duty in liaison with other personnel</td></tr></table> | 5.1 | Complete any required pre-start checks | 5.2 | Start up/shut down lifting equipment according to the equipment type and duty in liaison with other personnel | | | | | | | | | | | | |
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- 5.3 Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
- 5.4 Isolate artificial lift equipment and/or any component plant item
- 5.5 Make safe for required work
- 5.6 Check lift equipment/plant item is ready to be returned to service
- 5.7 De-isolate and prepare lift equipment/plant item for return to service

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
- limited head spaces or overhangs
- 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

Situations requiring action

Situations requiring action include one or more of the following:

- gassing up
- solids control
- gas lift valve erosion
- mechanical failures
- electrical and instrument failures

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and 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

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

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 other conditions/situations experienced on the plant.

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

Operate Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

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

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>