



Australian Government

PMAOPS434 Commission wells and gathering systems

Release: 1

PMAOPS434 Commission wells and gathering systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS434A Commission wells and gathering systems

Application

This unit of competency covers the skills and knowledge required to commission a well, its gathering system and their associated systems. It applies to operational commissioning which takes place after pre-commissioning of equipment and systems; pre-commissioning is typically performed by a contractor or projects team.

This unit of competency applies to senior operators, field technicians and those in similar roles who are required to apply in-depth knowledge of process and plant to in order to bring a new (or worked over/rejuvenated) well and its gathering system on line, make adjustments to ensure it is in steady operation and delivering at the required rate, balance the impact of the new well on the entire system, and ensure the system is ready to be handed over to a field operator for normal operation.

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

- wellheads
- chokes and control valves
- meters
- flow lines
- high point vents
- low point drains
- valves, including non-return and pressure/vacuum relief
- pumps and their prime movers
- product separation units
- instrumentation and control systems (variable speed drive (VSD) and proportional integral derivative (PID))
- testing equipment
- power units
- drive heads
- flares
- fuel gas systems
- chemical injection equipment
- field flares
- storage tanks.

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 well and its gathering system is ready for commissioning
1.6 Determine appropriate schedule and priorities for work |
| 2 | Accept handover of well and gathering system | 2.1 Ensure documents and other records provided match 'as is' plant and equipment
2.2 Check all issues have been satisfactorily resolved
2.3 Confirm status of individual items being handed over
2.4 Ensure plant and equipment are operationally sound and in accordance with contract
2.5 Accept handover when appropriate
2.6 Complete logs and reports in accordance with procedures |

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|---|---|-----|---|
| 3 | Commission well in accordance with procedures | 3.1 | Commission support systems |
| | | 3.2 | Commission wellhead and components |
| | | 3.3 | Make adjustments to bring well to stable operation |
| 4 | Commission gathering system in accordance with procedures | 4.1 | Commission support systems |
| | | 4.2 | Introduce product to gathering system |
| | | 4.3 | Check all equipment is operating correctly |
| | | 4.4 | Take action to solve problems |
| 5 | Monitor and adjust well and gathering system to meet production requirements | 5.1 | Take required readings |
| | | 5.2 | Ensure telemetry and controls are functional |
| | | 5.3 | Adjust downhole pump speed to maintain correct liquid level |
| | | 5.4 | Monitor nearby wells for impact of new well |
| | | 5.5 | Complete other site checks |
| | | 5.6 | Liaise with relevant operational personnel as required |
| | | 5.7 | Make appropriate adjustments to ensure new well is performing as required |
| | | 5.8 | Adjust new well and gathering system to balance the overall production to meet requirements |
| 6 | Finalise commissioning activities | 6.1 | Complete commissioning tasks as appropriate |
| | | 6.2 | Ensure identified faults are correctly logged/reported for action |
| | | 6.3 | Ensure incomplete tasks are scheduled for follow-up |
| | | 6.4 | Ensure all logs and reporting are complete and understood |

- 6.5 Check all systems are operational and all relevant personnel are informed

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
- working at heights, in restricted or confined spaces, or in environments subjected to heat, 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

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

Routine problems Routine problems are predictable problems with known solutions and include one or more of the following:

- leakage
- solids (formation fines)
- vibration
- loss of control of pressure and/or flow
- hydrate formation and blockages
- liquid slugging
- corrosion
- erosion
- sulphate reducing bacteria
- scale formation
- equipment failure
- change in product parameters (e.g. temperature, flow, pressure and

- level)
- fouling or contamination

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 and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Support systems and equipment

Support systems and equipment include as appropriate to the well system:

- fuel gas
- lubricating oil
- check valves
- control valves
- remote terminal unit
- telemetry (communications to base)
- control systems
- distributed control systems (DCS) screens
- other systems and equipment

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

Logs and reports

Logs and reports include one or more of the following:

- paper or electronic-based logs and reports

- verbal/radio reports
- reporting items found which require action

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS434A Commission wells and gathering systems

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 PMAOPS434 Commission wells and gathering systems

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include the ability to:

- undertake readings and operate and monitor well system
- analyse and interpret network communication and data on individual wells and recommend action to ensure flow meets plant and organisation needs
- perform site checks, start-up/shutdown procedures, and isolations and de-isolations
- interpret fluid level readings and maintain fluid levels
- plan and coordinate the work of the team
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
 - instrumentation failure/malfunction
 - electrical failure/malfunction
 - mechanical failure/malfunction
 - control system failure/malfunction
 - mismatch between flow rates and system requirements
 - wear, tear and corrosion of plant and equipment
 - quality measurement inaccuracy (e.g. analyser or sampling deficiency)
 - systemic/recurring problems
- identify hazards and risks and apply risk control procedures
- calculate volumetric flow rates and equipment efficiencies.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- oil/gas formation, structure and completions for coal seam gas (CSG), traditional or other oil/gas formations
- coal type and structure or other bedrock structures
- well design and construction
- inter-well communications (e.g. pressure, flow and other technical parameters)
- well status data (e.g. well flows, flow rates, pressure and temperature, and downhole conditions and information)
- hydrate formation

- free flow and pumped wells
- pumping principles
- gas flow principles
- gas/water separation principles
- draining and venting requirements
- corrosion control, chemical handling and safety data sheets (SDS)
- flange pressure and temperature ratings (basic)
- cathodic protection (basic)
- downhole drawings (DHDs) and their application to plant/well operation
- remote terminal unit, functions, operation and problems
- pump, drivehead, fuel gas systems operations and principles
- fluid dynamics and statics as relevant to the system
- reservoir management
- all items on a schematic of the remote system and the function of each
- methods of changing production rates and the advantages and disadvantages of each
- effect of specific climatic and environmental factors
- water testing and gas break through testing techniques
- function and troubleshooting of major components and their problems
- hierarchy of control
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:
 - should occur over a range of situations which include typical disruptions to normal, smooth operations
 - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
 - must include the use of hydrocarbon wells and gathering systems allowing demonstration of commissioning
 - may use industry-based simulation for part of the unit particularly where safety, lack of opportunity or significant cost is an issue.

- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - pilot plant operation
 - demonstration of skills
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures

- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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