



Australian Government

Assessment Requirements for PMAOPS305 Operate process control systems

Release: 1

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Modification History

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

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 demonstrate the ability to:

- identify and control hazards
- use schematics and data to monitor plant and optimise performance
- isolate the causes of problems and distinguish between causes of problems/alarm/fault indications, including:
 - instrument failure/malfunction
 - electrical failure/malfunction
 - mechanical failure/malfunction
 - equipment design deficiencies
 - product parameters (temperature, flows, pressure and levels)
 - process control system malfunction
 - power/utility failures
- communicate effectively with team, group, supervisors and other personnel
- recognise early warning signs of equipment/processes needing attention or with potential problems
- take appropriate action to ensure a timely return to full performance
- select and apply planned and unplanned start-up shutdown procedures
- identify and communicate information required by others
- complete written records.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- organisation procedures
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls
- the function and location of the process/production equipment
- interactions between plant items/processes
- product specifications and tolerances

- systems' operating parameters
- impact of external factors (e.g. variations in weather and feed)
- system integrity limits
- process control philosophies and strategies
- emergency shutdown procedures
- specific plant process operations
- process-specific science (physics, chemistry and biochemistry) to the level of being able to interpret the science and extract factors controlling the process and product and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions, such as salts and hydrates)
- basic science of upstream and downstream processes
- emergency shutdown procedures
- process drawings, such as piping and instrumentation diagram (P&ID) and process flow diagram (PFD)
- cause and effect
- control system architecture
- basis of control for the plant/s
- types of instrumentation and control systems, including feed forward, feedback and open control
- types of instrumentation and control system components and their role, including primary sensing devices, final control elements and transducers/transmitters
- how control loops and their components, including PID control, set points, controlled variable, indicated variable operate to control the process, and their limitations
- interaction between multiple control loops, including cascade control
- impacts of changing controller settings and the limits within which changes can be made
- effective communication techniques
- uninterrupt power supplies (UPS) and its applications and use.

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 operation of an operating plant
 - will typically include a supervisor/third-party report or other evidence 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
 - may include the use of an appropriate process control system controlling an industrial plant requiring demonstration of operation, start-up and shutdown procedures and responding to problems

- may use an appropriate process control system linked to a simulator which simulates an industrial plant requiring demonstration of operation, start-up and shutdown procedures and responding to problems
- may use industry-based simulation for all or 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:
 - simulator
 - 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.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>