



Australian Government

**Assessment Requirements for MARL032
Demonstrate advanced knowledge of
marine control systems and automation**

Release: 1

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Modification History

Release 1. New unit of competency.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- accessing information and sketching diagrams, and interpreting and explaining testing requirements related to control systems on commercial vessels
- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- explaining advance principles of marine automation and process control, and imparting knowledge and ideas verbally, in writing and visually
- identifying and interpreting numerical and graphical information, including schematic diagrams, relevant to control systems on commercial vessels
- identifying and suggesting ways of rectifying faults and malfunctions in control systems on commercial vessels
- identifying methods, procedures and materials needed to operate and maintain control systems on commercial vessels
- reading and interpreting written information related to operating control systems on commercial vessels.

Knowledge Evidence

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

- analogue and digital programmable logic controllers
- Australian Standards for drawing symbols/layouts for schematic diagrams
- characteristics and functions of temperature, pressure and viscosity of fuel
- concept of 'fail safe' philosophy
- concepts of unmanned machinery spaces (UMS), and automated monitoring and control of machinery
- control and monitoring of ship machinery

- control:
 - loops
 - theory
- electronic:
 - temperature sensors and transmitters
 - transmitters
- fault-finding techniques for control systems
- final control element arrangements
- governors
- instrument process and control terms
- machinery space monitoring alarm and control systems
- measurement and test equipment used for fault-finding electronic apparatus
- mechanical and electrical sensors
- PID electronic controllers
- pneumatic and electrical instrumentation transmitters
- principles of:
 - basic electronic circuits
 - basic pneumatic systems and action of pneumatic instruments
 - process control
- safety devices, alarms and monitoring systems
- sensing and transmitting elements
- signal transmissions systems used for monitoring, controlling and shutting down machinery
- tests and procedures required to meet UMS requirements
- WHS/OHS legislation, policies and procedures.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must satisfy the National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) standards.

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.

Assessment must occur in workplace operational situations or where these are not available, in simulated workplace operational situations or an industry-approved marine operations site that replicates workplace conditions where advanced knowledge of marine control systems and automation can be demonstrated.

Resources for assessment include access to:

- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

- appropriate range of relevant operational situations in the workplace
- technical reference library with current publications on automation and process control
- tools, equipment, materials and personal protective equipment currently used in industry.

Performance should be demonstrated consistently over time and in a suitable range of contexts.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>