



Australian Government

Assessment Requirements for MARL029 Demonstrate intermediate knowledge of marine steam turbines and main boilers

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 diagnostic information related to marine steam turbines
- 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
- identifying and applying relevant solutions to problems that can occur during operation of steam propulsion plant and associated systems on a steam vessel
- identifying and interpreting diagnostic information, and perform mathematical calculations related to operating, maintaining and repairing marine steam turbines
- identifying methods, procedures and materials needed for operating, maintaining and repairing marine steam turbines
- imparting knowledge and ideas through verbal, written and visual means
- reading and interpreting manuals, technical specifications, safety data sheets/material safety data sheets and manufacturer guides related to operating, maintaining and repairing marine steam turbines.

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:

- basic principles of operation of main steam propulsion and auxiliary systems on a steam vessel, including:
 - methods of turbine control, including safety devices
 - symptoms, causes and effects of defects of auxiliary steam turbines and actions to be taken
 - construction and operation of main and auxiliary steam turbines

- procedures for emergency operation of a steam turbine
- construction and operation of feed system
- construction and operation of high-pressure turbines
- construction, operation and repair of high-pressure water tube boilers
- energy balance for a steam turbine plant
- established engineering practice and procedures for operation of shipboard steam propulsion plant and associated systems in warm-through, manoeuvring, start up, normal running, emergency and shut down situations
- fundamental principles of steam propulsion systems and boilers
- hazards and problems that can occur during operation of steam propulsion plant and associated systems, and appropriate preventative and remedial action
- methods of lubricating principal components of a marine steam propulsion turbine and its associated gearing, and evaluating common faults, including common lubrication faults, symptoms, causes, and actions to be taken with such faults
- operational characteristics and performance specifications for different types of steam propulsion plant and associated systems on a steam vessel of unlimited propulsion power
- procedures for reading and interpreting readings and indications of performance of steam propulsion plant and associated systems
- requirements for feed water treatment for high-pressure water tube boilers
- simple cycle marine gas turbine
- turbine gearing arrangements
- types, properties, tests, applications and treatment of fuels, lubricants and solvents/chemicals used on board a steam vessel, including working principles, construction, maintenance and safe operation of centrifuges, filters, and other treatment devices
- typical operating precautions for steam propulsion plant and associated systems to ensure operational performance complies with bridge orders, technical specifications, survey requirements, and established safety and anti-pollution rules and regulations
- units of measurement
- WHS/OHS legislation and policies.

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 an industry-approved marine operations site where intermediate knowledge of marine steam turbines and main boilers can be demonstrated.

Resources for assessment include access to:

- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- diagrams, specifications and other information related to marine steam turbines
- technical reference library with current publications on basic marine steam turbines
- 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>