



Australian Government

Assessment Requirements for MARC009

Operate and monitor marine internal combustion engines, propulsion plant and auxiliary systems

Release: 2

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Modification History

Release 2. Performance Evidence and Knowledge Evidence amended to include correct information.

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 and performance criteria on at least one occasion and include:

- explaining:
 - method of propulsion plant reversal
 - operation of marine gearboxes
 - two- and four-stroke cycles of operation
- identifying constructional parts of marine internal combustion engines
- keeping running and maintenance logs
- managing:
 - lubricating systems and preventing pollution of marine environment
 - cooling systems
 - pumping systems and preventing pollution of marine environment
 - stowage of flammable/explosive materials and refrigerant gases
- operating:
 - refrigeration system
 - marine internal combustion engines within technical specifications
- operating main propulsion plant and auxiliary systems within recommended parameters
- operating and maintaining steering systems
- preparing vessel and machinery for sea
- recognising and rectifying operational faults
- securing vessel and machinery after voyage.

Knowledge Evidence

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

- bilge pumping for vessels with several compartments
- common faults:
 - in steering gear
 - of deck machinery
- construction of heat exchangers
- controllable pitch propellers (CPP) construction and operation
- coolant circulation and thermostats
- correct pressure and flow conditions
- corrosion prevention
- cross connections between:
 - bilge/ballast/seawater systems and fire main
 - seawater systems and bilge systems
- dangers associated with:
 - back-flooding and methods to prevent back-flooding
 - liquefied petroleum gas (LPG) and petrol vapours
 - refrigerant gas leaks in confined spaces
- diesel engine:
 - construction
 - operation
 - fuel injection, timing and control equipment
- dry sump and wet sump lubrication systems and components
- electrohydraulic steering gear
- emergency steering
- engine:
 - protection arrangements
 - performance and reasons for lack of performance
 - watchkeeping duties
- environmental responsibilities, regulations and legislative requirements
- gearbox fault identification and emergency operation
- governor operation
- hazards of refrigerants
- heat exchanger, keel cooler and raw water cooling systems
- lubrication and cooling:
 - of gearboxes
 - effects
- lubricating oil system faults
- method of propulsion plant reversal including CPP
- own ability and limits to rectify irregularities and faults
- preparations and checks necessary before sailing
- pump capabilities and requirements for priming
- refrigeration system and components

- reverse/reduction gearbox operation
- routine for operating and maintaining steering systems
- seawater circulating systems
- securing vessel after voyage
- ship side valves
- shutting down machinery
- spares and stores required for proposed voyage
- storage of LPG cylinders
- testing:
 - steering gear
 - LPG detectors
- turbo charging and supercharging arrangements
- types and operation of deck machinery including basic hydraulic systems
- types of:
 - gear trains
 - pumps and safety devices.

Assessment Conditions

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

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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.

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

Links

MAR Maritime Training Package Companion Volume Implementation Guide at: -
http://companion_volumes.vetnet.education.gov.au/Pages/TrainingPackage.aspx?pid=22