



Australian Government

Assessment Requirements for MARL057

Demonstrate basic knowledge of marine diesel engines and systems

Release: 2

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Modification History

Release 2. This is the second release of this qualification in the MAR Maritime Training Package with minor change to performance evidence.

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package.

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:

- accessing diagnostic information related to marine diesel engines and systems
- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- explaining basic operation of marine diesel engines and systems
- identifying and applying relevant solutions for addressing problems associated with marine diesel engines and systems
- identifying and interpreting diagnostic information, and performing mathematical calculations related to operating, maintaining and repairing marine diesel engines and systems
- identifying methods, procedures and materials needed for operating, maintaining and repairing marine diesel engines and systems
- imparting knowledge and ideas through verbal, written and visual means
- providing accurate and reliable information
- providing appropriate level of detail in responses
- reading and interpreting manuals, technical specifications, safety data sheets (SDS)/material safety data sheets (MSDS) and manufacturer guides related to operating, maintaining and repairing marine diesel engines and systems.

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:

- basic principles of diesel engine operation, including:
 - basic construction
 - engine principles
 - engine types
 - fuel atomisation and combustion

- heat-engine cycle
- ideal gas cycle
- common combustion faults, including:
 - engine cylinder fuel supply
 - lack of total combustion
- components of diesel engines
- crankcase and air-line explosions, scavenge and uptake fires
- diesel engine, including:
 - medium speed and high-speed diesel engine
 - slow-speed diesel engine
- diesel engine:
 - lubrication systems
 - propulsion and power generation
- diagnostic information, including:
 - engine efficiency
 - fuel consumption
 - temperature
- hazards, including:
 - acids
 - chemicals
 - defective or bypassed machinery protective devices
 - defective or inappropriately adjusted exhaust systems
 - enclosed spaces
 - flammable liquids under pressure
 - hydrocarbons
 - leaking oil and fuel
 - lifting heavy components both unaided and with lifting gear
- manoeuvring systems of diesel engines
- methods of pressure-charging diesel engines, including:
 - exhaust gas turbocharging
 - positive displacement engine-driven blowers
 - under-piston assistance
- pressure-charging diesel engines, including common service faults, actions to rectify faults, emergency operation and isolation procedures
- properties and characteristics of fires
- safe working practices associated with diesel engines during operation, maintenance and repair
- starting methods of diesel engines
- work health and safety (WHS)/occupational health and safety (OHS) legislation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

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.

Practical assessment must occur in a workplace, or realistic simulated workplace, under the normal range of workplace conditions.

Simulations and scenarios may be used where situations cannot be provided in the workplace or may occur only rarely, in particular for situations relating to emergency procedures and adverse weather conditions where assessment would be unsafe, impractical or may lead to environmental damage.

Resources for assessment must include access to:

- applicable documentation, such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- tools, equipment, machinery, materials and relevant personal protective equipment (PPE) currently used in industry, including:
- diesel engine components:
 - camshafts
 - crankshafts
 - cross-heads
 - cylinder heads
 - exhaust valves
 - frames
 - fuel injectors
 - fuel pumps
 - liners
 - pistons
 - turbochargers
 - valves and rocker gear.

Links

Companion Volume Implementation Guides are found in VETNet -

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