



Australian Government

**MARB048 Undertake maintenance of
machinery, machinery systems and
structural components**

Release: 1

MARB048 Undertake maintenance of machinery, machinery systems and structural components

Modification History

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

Application

This unit involves the skills and knowledge required to establish, organise and implement a preventative and reactive maintenance program and capabilities for machinery, machinery systems and structural components to optimise vessel operational performance.

It includes verifying maintenance requirements; establishing maintenance systems; organising maintenance activities; supervising maintenance tasks; performing planned and breakdown maintenance activities; monitoring, adjusting and reporting on implementation of the maintenance plan; and carrying out damage control procedures.

This unit of competency applies to people working in the maritime industry in the capacity of:

- Chief Engineer on vessels with inboard engines less than 1500 kW within the exclusive economic zone (EEZ)
- Second Engineer on vessels with inboard engines less than 3000 kW within the EEZ
- Chief or Second Engineer on vessels with outboard engines with unlimited propulsion power within the EEZ
- an assistant under the direct supervision of the Chief Engineer
- a worker in the engine room of a vessel less than 80 metres long with propulsion power less than 3000 kW.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit.

This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as a Marine Engine Driver Grade 1 Near Coastal as defined in the National Standard for Commercial Vessels (NSCV) Part D.

Note: Relevant state/territory training and qualification requirements must be fulfilled by any persons carrying out installation, maintenance and/or repair of refrigeration equipment, especially with regard to preventing the escape of refrigerants into the atmosphere and to electrical work.

Pre-requisite Unit

Not applicable.

Competency Field

B - Equipment Checking and Maintenance

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Verify maintenance requirements

2 Establish maintenance systems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Maintenance program regulatory and organisational requirements for machinery, machinery systems and structural components are identified and followed
- 1.2 Technical specifications, service requirements and organisational procedures for machinery, machinery systems and structural components are checked for recommended maintenance requirements
- 1.3 Special requirements for maintenance of machinery, machinery systems and structural components are separated from normal lubrication, adjustment and day-to-day maintenance schedules
- 1.4 Maintenance system goals for machinery, machinery systems and structural components are outlined
- 1.5 Maintenance plan and related work schedule for machinery, machinery systems and structural components are developed
- 2.1 Maintenance costs are identified and quantified
- 2.2 Processes, procedures and delays are documented
- 2.3 Internal and external maintenance providers are specified
- 2.4 Maintenance plan is prepared to minimise ship operation costs, waste and harm to the environment

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| | 2.5 | Approvals for maintenance plan are negotiated and confirmed |
| | 2.6 | Recordkeeping systems are developed and maintained |
| 3 | Organise maintenance activities | |
| | 3.1 | Schedules and rosters are checked to verify time when maintenance process may be scheduled, including optimal timing for shutdown |
| | 3.2 | Agreement with the Master is obtained for timing of maintenance tasks to optimise maintenance process and minimise operational disruptions |
| | 3.3 | Detailed work plans are developed in line with schedules, availability of expertise, scheduling of resource availability and environmental requirements |
| | 3.4 | Team members with required competencies are allocated to maintenance activities |
| | 3.5 | Consumables and equipment are secured to meet work plan requirements |
| | 3.6 | Externally sourced equipment, consumables and expertise are located and procured |
| | 3.7 | Contingency plans are prepared |
| | 3.8 | Maintenance schedules and procedures are effectively communicated to the team |
| 4 | Supervise maintenance tasks | |
| | 4.1 | Job specifications and maintenance tasks are communicated effectively to team members |
| | 4.2 | Maintenance and repair tasks are monitored to ensure they satisfy technical specifications |
| | 4.3 | Work health and safety (WHS)/occupational health and safety (OHS) requirements are monitored and observed at all times |
| | 4.4 | Emergency equipment is made available and working order of equipment is ensured |
| | 4.5 | Contingencies are managed to ensure quality of work is maintained and work is completed within agreed timeframe |
| 5 | Perform planned | |
| | 5.1 | WHS/OHS risk control measures and procedures for |

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| maintenance activities | carrying out work are followed |
| | 5.2 Preventative maintenance is carried out in compliance with technical specifications |
| | 5.3 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes |
| | 5.4 Ongoing quality checks of maintenance work are undertaken according to technical specifications |
| | 5.5 Work is carried out efficiently without waste of materials and damage to equipment, machinery or other services |
| | 5.6 Worksite is made safe according to organisational safety procedures |
| | 5.7 Maintenance work is checked to verify that it conforms with technical specifications |
| 6 Perform breakdown maintenance | 6.1 Nature of breakdown is ascertained and reported to appropriate personnel or authorities |
| | 6.2 Maintenance records of machinery, machinery systems and structural components related to reported breakdown are reviewed for possible causes |
| | 6.3 Extent of breakdown is evaluated and confirmed using diagnostic and troubleshooting techniques |
| | 6.4 Restrictions are applied to operations, where necessary, and agreed to with the Master |
| | 6.5 Extent of repair work is ascertained from available evidence |
| | 6.6 Limits of repair work that can be carried out are established |
| | 6.7 Machinery and equipment are isolated |
| | 6.8 Repair work is carried out according to technical specifications |
| | 6.9 Master is notified of completed repair work and details are documented |
| 7 Monitor, adjust and | 7.1 Execution of maintenance tasks is monitored to ensure |

report on implementing the maintenance plan	they are completed according to maintenance plan and statutory survey requirements
	7.2 Machinery, machinery systems and structural components are monitored to ensure achievement of planned outcomes
	7.3 Costs are monitored and controlled
	7.4 Adjustments are made to maintenance plan to take into account failure to achieve planned outcomes
	7.5 Reports are completed according to maintenance plan requirements and organisational procedures
	7.6 Recommendations to improve maintenance plan safety, efficiency and effectiveness are implemented under regular review of safety management system (SMS)
	7.7 Machinery, machinery systems and structural components are maintained in a clean and safe operational condition
8 Carry out damage control procedures	8.1 Damage to vessel hull and watertight integrity is ascertained and monitored according to established procedures and safety regulations
	8.2 Appropriate damage control measures are implemented to maintain watertight integrity and to control flooding of vessel according to vessel emergency and safety management plans

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

This unit replaces and is equivalent to MARB012 Undertake maintenance of machinery, machinery systems and structural components.

Links

Companion Volume implementation guide can be found in VetNet -

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