



Australian Government

**MARB020 Manage repairs and
maintenance of a vessel 500 gross tonnage
or more**

Release: 1

MARB020 Manage repairs and maintenance of a vessel 500 gross tonnage or more

Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package Release 3.0.

Application

This unit involves the skills and knowledge required to implement a vessel planned maintenance system to ensure effective maintenance of a vessel 500 gross tonnage or more to ensure its seaworthiness.

This unit applies to maritime workers working in the maritime industry as a Master Unlimited.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

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 Define maintenance targets

PERFORMANCE CRITERIA

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

- 1.1 Compliance documentation relevant to maintaining the vessel is interpreted
- 1.2 Vessel planned maintenance system is interpreted to establish maintenance activities and priorities, according to regulatory and organisational requirements
- 1.3 Current maintenance practices are reviewed to evaluate

efficiency, reliability and comparative cost effectiveness

1.4 Maintenance targets are set to ensure compliance and cost effectiveness

2 Optimise maintenance management

2.1 Objectives of maintenance are clearly defined and appropriate maintenance mechanisms are determined

2.2 Preventative maintenance activities are forecast, scheduled and matched to resources to ensure work is done on time and within cost

2.3 Optimal cost balance between preventative and corrective maintenance activities is determined

2.4 Priority system for preventative and corrective maintenance is developed based on critical analysis to maximise quality outcomes

2.5 Maintenance plan is negotiated and agreed in consultation with relevant stakeholders

2.6 Monitoring and reporting arrangements for maintenance activities are established and documented according to organisational procedures

2.7 Risk management plan to identify, assess and control risks is incorporated into maintenance plan according to regulatory and organisational requirements

3 Organise support processes

3.1 Resource requirements are determined and organised according to the maintenance plan

3.2 Targets and milestones are identified and linked to the achievement of outcomes according to the maintenance plan

3.3 Documentation and checklists associated with the implementation of the maintenance plan are prepared in established formats and distributed to relevant people

3.4 Information related to the implementation of the maintenance plan is distributed according to organisational procedures

3.5 Contingency arrangements for the implementation of the maintenance plan are identified

4 Monitor implementation of

4.1 Progress is systematically monitored and variations to implementation of the maintenance plan are verified as

maintenance plan	required with relevant people
	4.2 Expenditure and resource usage are monitored and controlled to ensure objectives are achieved within specified parameters
	4.3 Coaching and mentoring assistance is provided to crew members as required to overcome difficulties in implementing the plan
	4.4 Systems, records and reporting procedures are maintained according to regulatory and organisational requirements
5 Evaluate implementation of maintenance plan	5.1 Regular reports on progress and outcomes are provided orally or in writing to relevant stakeholders to ensure completion of activities is in line with maintenance plan
	5.2 Systematic review processes and established evaluation methods are used to evaluate implementation processes and outcomes
	5.3 Evaluation results are prepared in required format and presented to relevant people within agreed timeframes
	5.4 Recommendations for improving implementation processes are presented to relevant people according to organisational procedures
	5.5 Relevant documentation is completed and processed according to regulatory and organisational requirements

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.

Compliance documentation includes one or more of the following:

- cargo gear and equipment register
- maintenance schedules and records according to the planned maintenance system
- port state control inspection records
- statutory survey certificates
- statutory survey periodic inspection records
- vessel general arrangement plans, docking plan and manuals relevant to maintenance requirements

Vessel planned maintenance system includes one or more of the following:

- adequate back up, either back-up copy on board or a regular exchange of data between ship and office for computerised systems
- documents specifying maintenance jobs carried out and their results
- equipment manufacturer requirements as part of planned maintenance program
- following maintenance procedures
- performance results and measurements taken at certain intervals for trend investigations from delivery stage
- procedures required for docking preparation, including repair lists and survey requirements
- signing instructions to indicate who is responsible for verification of maintenance work carried out
- time intervals at which the maintenance jobs are to take place
- writing description and documentation of planned maintenance system in English

Preventative maintenance activities include one or more of the following

- applying lubricants to moving parts
- hull cleaning and painting
- identifying deterioration of vessel structure and fittings, including cargo spaces, fresh water and ballast tanks
- inspecting and repairing or replacing cargo handling equipment including wires, blocks, shackles, chains and hooks
- prescribed tank inspections
- restoring weathered and rusted surfaces
- routine maintenance inspections

Corrective maintenance activities include one of the following:

- damage repairs and control measures
- replacing defective parts

- Maintenance plan includes one or more of the following:
- budgets and timetables that enable the commitment of resources at appropriate points
 - consultative processes to involve stakeholders
 - contingency plans to cater for changes or significant difficulties
 - damage control plans
 - environment plans
 - life cycle management plans
 - long-term capital and maintenance financial forecast
 - maintenance standards
 - objectives, scope and expected benefits of plan
 - quality assurance procedures
 - risk management processes
 - specifications
 - vessel and machinery and equipment maintenance, cleaning and lifesaving appliances maintenance
- Targets and milestones include one or more of the following:
- agreed reporting requirements
 - completing key tasks and maintenance phases
 - measurement and achievement of set outcomes
 - progress reports
- Contingency arrangements include one or more of the following:
- budgetary constraints
 - competing work demands of contractors
 - environmental factors, such as time and weather
 - equipment and technology breakdown
 - industrial disputes
 - non-availability of resources and materials
 - unforeseen incidents
 - workplace hazards, risks and controls
- Evaluation methods include one or more of the following:
- checklists
 - cost data analysis
 - interviews
 - observation
 - review of quality assurance data
 - review of safety and planned maintenance systems

Unit Mapping Information

This unit replaces and is equivalent to MARB6001A Manage repairs and maintenance of a vessel 500 gross tonnage or more.

MARB6001A replaces and is equivalent to TDMMB4307A Monitor and manage the seaworthiness of the vessel.

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MARB020 Manage repairs and maintenance of a vessel 500 gross tonnage or more

Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package Release 3.0.

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:

- analysing current practice
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices
- attending to detail when completing documentation
- documenting information
- ensuring currency of relevant legislative and regulatory knowledge
- estimating resource and time requirements
- identifying potential barriers to implementing maintenance plan, analysing risks and establishing contingencies
- making decisions
- preparing appropriate reports on the outcomes of inspection and maintenance activities to ensure the seaworthiness of a vessel
- preparing docking requirements including repair lists and survey requirements
- preparing a detailed vessel maintenance plan that incorporates strategies addressing risk management, resource needs, monitoring and reporting arrangements, and quality assurance controls
- providing high quality reports
- sequencing maintenance activities logically, planning and documenting strategies to implement maintenance plans, setting goals and meeting time constraints
- undertaking forecasting and scheduling.

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:

- beam theory and stress calculations
- construction of double bottoms, ship's hull, bulkheads, fore and aft ends, construction of tankers, bulk carriers and container vessels
- construction, materials, layout and subdivision requirements of a typical vessel, including the freeboard and bulkhead deck, watertight compartments, weather tight compartments, the bulkhead of the vessel and the collision bulkhead
- corrosion control measures including surface preparation, painting and antifouling
- fire protection on ships
- nature and causes of corrosion of marine surfaces and structures, and the available methods for its control
- preservatives and finishes used in marine maintenance, and the related procedures and precautions to be taken for preparation, application and storage
- principal features of the structure of a vessel
- properties and application of materials used in vessel construction
- relevant national and international legislation related to maintaining vessels
- stresses imposed on vessels at sea
- typical problems related to slipping, docking and maintaining vessels with appropriate action and solutions
- vessel and machinery specifications, vessel design machinery design drawings, operational manuals, specifications, and electrical and control circuit diagrams
- vessel planned maintenance system.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

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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 this is not available, in simulated workplace operational situations or an industry-approved marine operations site that replicate workplace conditions where the management of vessel maintenance and repairs can be demonstrated.

Resources for assessment include access to:

- relevant documentation including budgets and operating costs, service and maintenance records, workplace procedures, regulations and legal documentation and operation manuals.

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

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