



Australian Government

**MARB6001A Manage repairs and
maintenance of a vessel 500 gross tonnage
or more**

Release 1

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Modification History

Release 1

This is the first release of this unit.

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

Unit Descriptor

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.

Application of the Unit

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

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

- | | |
|--|--|
| 1 Define maintenance targets | <p>1.1 <i>Compliance documentation</i> relevant to the maintenance of the vessel is interpreted</p> <p>1.2 <i>Vessel planned maintenance system</i> is interpreted to establish maintenance activities and priorities according to regulatory and organisational requirements</p> <p>1.3 Current maintenance practices are reviewed to evaluate efficiency, reliability and comparative cost effectiveness</p> <p>1.4 Maintenance targets are set to ensure compliance and cost effectiveness</p> |
| 2 Optimise maintenance management | <p>2.1 Objectives of maintenance are clearly defined and appropriate maintenance mechanisms are determined</p> <p>2.2 <i>Preventative maintenance activities</i> are forecast, scheduled and matched to resources to ensure work is done on time and within cost</p> <p>2.3 Optimal cost balance between preventative and <i>corrective maintenance activities</i> is determined</p> <p>2.4 Priority system for preventative and corrective maintenance is developed based on critical analysis to maximise quality outcomes</p> <p>2.5 <i>Maintenance plan</i> is negotiated and agreed in consultation with <i>relevant stakeholders</i></p> <p>2.6 Monitoring and reporting arrangements for maintenance activities are established and documented according to organisational procedures</p> <p>2.7 Risk management plan to identify, assess and control risks is incorporated into maintenance plan according to regulatory and organisational requirements</p> |
| 3 Organise support processes | <p>3.1 <i>Resource requirements</i> are determined and organised according to the maintenance plan</p> <p>3.2 <i>Targets and milestones</i> are identified and linked to the achievement of outcomes according to the maintenance plan</p> <p>3.3 <i>Documentation</i> and checklists associated with the implementation of the maintenance plan are prepared in established formats and distributed to relevant people</p> <p>3.4 Information related to the implementation of the maintenance plan is distributed according to organisational procedures</p> |

- 3.5 *Contingency arrangements* for the implementation of the maintenance plan are identified
- 4 Monitor implementation of maintenance plan**
- 4.1 Progress is systematically monitored and variations to implementation of the maintenance plan are verified as 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 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

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required Skills:

- Analyse current practice
- Document information
- Estimate resource and time requirements
- Identify potential barriers to implementing maintenance plan, analyse risks and establish contingencies
- Make decisions
- Prepare appropriate reports on the outcomes of inspection and maintenance activities to ensure the seaworthiness of a vessel
- Prepare docking requirements including repair lists and survey requirements
- Sequence maintenance activities logically, plan and document strategies to implement maintenance plans, set goals and meet time constraints
- Undertake forecasting
- Undertake scheduling

Required Knowledge:

- Construction, 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
- 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 the maintenance of vessels
- Typical problems related to slipping, docking and maintenance of vessels with appropriate action and solutions
- Vessel and machinery specifications, machinery design drawings, operational manuals, specifications, and electrical and control circuit diagrams
- Vessel planned maintenance system

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, the required skills and knowledge, the range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required Knowledge and include:

- preparing a detailed vessel maintenance plan that incorporates strategies addressing risk management, resource needs, monitoring and reporting arrangements, and quality assurance controls
- attention to detail when completing documentation
- providing high quality reports
- ensuring currency of relevant legislative and regulatory knowledge.

Context of and specific resources for assessment

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

Resources for assessment include access to:

- industry-approved marine operations site where managing repairs and maintenance of a vessel of 500 gross tonnage or more may be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities
- range of relevant exercises, case studies and/or other simulated practical and knowledge assessments
- appropriate range of relevant operational situations in the workplace.

In both real and simulated environments, access is required to:

- relevant and appropriate materials and equipment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

Method of assessment

Practical assessment must occur in an:

- appropriately simulated workplace environment and/or
- appropriate range of situations in the workplace.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate to this unit:

- direct observation of the candidate managing repairs and maintenance of a vessel of 500 gross tonnage or more

- direct observation of the candidate applying relevant WHS/OHS requirements and work practices.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

In all cases where practical assessment is used it should be combined with targeted questioning to assess Required Knowledge.

Assessment processes and techniques must be appropriate to the language and literacy requirements of the work being performed and the capacity of the candidate.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.

- Compliance documentation may include:
- 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 may include:
- 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 may include:
- 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 may include:
- Damage repairs and control measures
 - Replacing defective parts

- Maintenance plan may include:
- 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
- Relevant stakeholders may include:
- Crew members
 - Engineers
 - Management
 - Subcontractors
 - Technical experts
 - Work health and safety (WHS)/occupational health and safety (OHS) representatives
- Resource requirements may include:
- Contractors
 - Crew members
 - Equipment
 - Materials
 - Specialist advice
 - Technicians
 - Training
- Targets and milestones may include:
- Agreed reporting requirements
 - Completing key tasks and maintenance phases
 - Measurement and achievement of set outcomes
 - Progress reports
- Documentation may include:
- Budgets and operating costs
 - Legal documentation
 - Service and maintenance records
- Contingency arrangements may include:
- Budgetary constraints
 - Competing work demands of contractors
 - Environmental factors, such as time and weather
 - Equipment and technology breakdown
 - Industrial disputes

Evaluation methods may include:

- Non-availability of resources and materials
- Unforeseen incidents
- Workplace hazards, risks and controls
- Checklists
- Cost data analysis
- Interviews
- Observation
- Review of quality assurance data
- Review of safety and planned maintenance systems

Unit Sector(s)

Not applicable.

Competency Field

Equipment Checking and Maintenance