



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

**Revision Number: 1**

## TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL

### Modification History

Not applicable.

### Unit Descriptor

UNIT DESCRIPTOR:

**This unit involves the skills and knowledge required to monitor and manage the seaworthiness of a commercial vessel, including overall management of the maintenance system, overseeing the planning for docking and slipping of the vessel, ensuring that inspection and maintenance procedures are followed, and that appropriate equipment and materials are selected and used.**

### Application of the Unit

<b>Application of the unit</b>	The unit has application in qualifications for Master on a vessel of 500 gross tonnage or more operating in international waters, i.e. Advanced Diploma of Transport&Distribution(Maritime Operations - Master Unlimited).
--------------------------------	--

### Licensing/Regulatory Information

<b>Licensing/legislative requirements</b>	The unit is consistent with the relevant sections of STCW 95, the International Ship and Port Facility Security (ISPS) Code and Marine Orders under the Australian Navigation Act 1912, describing requirements for a Master on a vessel of 500 gross tonnage or more operating in international waters.
---	--

## Pre-Requisites

Not applicable.

## Employability Skills Information

Not applicable.

## 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

ELEMENT	PERFORMANCE CRITERIA
<p><b>1 Manage the maintenance system</b></p>	<ul style="list-style-type: none"> <li>a Plans for the routine preventative maintenance of a vessel are checked and confirmed with relevant personnel as per standard operating procedures</li> <li>b Maintenance activities are monitored to confirm that they are correctly carried out at the required times</li> <li>c Repairs to vessel's hull or equipment and/or repair or replacement of equipment or components are monitored to confirm that they have been organised as per standard operating procedures and survey and regulatory requirements</li> </ul>
<p><b>2 Manage the docking and slipping of vessel</b></p>	<ul style="list-style-type: none"> <li>a Type of slipway, dock or vessel lifting facility is identified and its suitability for the type of hull assessed</li> <li>b Hull data is correctly interpreted and recorded</li> <li>c Checks are made to ensure that an appropriate plan is prepared for procedures to be taken on-board vessel prior to, during and on completion of the proposed slipping or docking operations</li> <li>d Checks are made to ensure that the cradle is correctly prepared prior to the slipping of the vessel</li> </ul>

ELEMENT	PERFORMANCE CRITERIA
	<ul style="list-style-type: none"> <li>e Checks are made to ensure that required precautions are taken prior to slipping and refloating of the vessel and when shoring/supporting the vessel</li> <li>f Vessel is correctly refloated after slipping and maintenance operations</li> </ul>
ELEMENT	PERFORMANCE CRITERIA
<p><b>3 Manage the conduct of inspection and maintenance procedures</b></p>	<ul style="list-style-type: none"> <li>a Inspections of the vessel's hull, equipment and components are monitored to ensure that they are carried out in accordance with company maintenance schedules and vessel manufacturer's instructions</li> <li>b Required action for repair, restoration, cleaning, lubrication and application of marine preservatives and finishes and other maintenance materials and chemicals is managed to ensure that it is carried out as per survey requirements, maritime and OH&amp;S regulations, company procedures and manufacturer's instructions</li> <li>i Problems in the planned maintenance activities are identified in collaboration with relevant personnel and appropriate action is initiated as per standard operating procedures</li> <li>j Records of maintenance work carried out are completed in accordance with company procedures</li> </ul>
<p><b>4 Monitor the selection and use of maintenance equipment and materials</b></p>	<ul style="list-style-type: none"> <li>a Standard operating procedures are established for the selection and use of maintenance equipment and materials</li> <li>b Checks are made to ensure that tools and equipment are correctly identified and used in accordance with OH&amp;S requirements, company procedures and equipment manufacturer's instructions</li> <li>c Checks are made to ensure that maintenance materials are obtained, handled, prepared and applied in accordance with manufacturer's instructions and OH&amp;S and pollution control requirements</li> </ul>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
	<ul style="list-style-type: none"><li>d Checks are made to ensure that defective equipment and materials are identified and reported, repaired and/or replaced as required</li><li>e Checks are made to ensure that maintenance equipment is correctly cleaned and stored after use</li><li>f Checks are made to ensure that unused materials are disposed of or returned to store in accordance with established procedures and manufacturer's instructions</li></ul>

## **Required Skills and Knowledge**

### **REQUIRED SKILLS AND KNOWLEDGE**

#### **REQUIRED KNOWLEDGE**

*This describes the knowledge required for this unit.*

- 1 Relevant sections of applicable maritime regulations
- 2 Relevant OH&S and pollution control legislation and policies
- 3 Procedures for the checking and inspecting the seaworthiness of a vessel as part of routine maintenance procedures to ensure compliance with the company requirements and established safety rules and regulations
- 4 Procedures for the initiation and coordination of repair and/or replacement procedures on board vessels
- 5 The nature and causes of corrosion of marine surfaces and structures and the available methods for its control
- 6 Corrosion control measures, including surface preparation, painting and antifouling
- 7 Preservatives and finishes used in marine maintenance and the related procedures and precautions to be taken for preparation, application and storage
- 8 Safety, environmental and hazard control precautions and procedures relevant to inspection and maintenance operations
- 9 Principal features of the structure of a vessel
- 10 A basic understanding of the properties and application of materials used in vessel construction
- 11 Construction, layout and subdivision requirements of a typical vessel, including an understanding of freeboard and bulkhead deck, watertight compartments, weathertight compartments, the bulkhead of the vessel and collision bulkhead
- 12 Slipping and docking procedures suitable for various types of hull forms
- 13 Maritime communication techniques needed during slipping and maintenance operations
- 14 Typical problems related to the slipping and maintenance of vessels and appropriate action and solutions
- 15 Maintenance records that must be maintained to meet company and regulatory requirements

## **REQUIRED SKILLS**

*This describes the basic skills required for this unit.*

- 1 Communicate effectively with other personnel when managing the seaworthiness of a vessel
- 2 Communicate with multilingual crew where applicable using established techniques
- 3 Interpret and monitor the application of procedures for the maintenance of the seaworthiness of a vessel
- 4 Read and interpret vessel and machinery specifications, machinery design drawings, machine drawings, operational manuals, specifications and electrical and control circuit diagrams
- 5 Interpret and follow all safety management procedures and precautions when managing the seaworthiness of a vessel
- 6 Read and interpret material safety data sheets
- 7 Provide leadership to other shipboard personnel when managing the seaworthiness of a vessel
- 8 Prepare appropriate reports on the outcomes of inspection and maintenance activities to ensure the seaworthiness of the vessel
- 9 Identify problems that can occur when managing of the seaworthiness of a vessel and initiate appropriate action
- 10 Adapt to differing types of vessels and equipment
- 11 Take appropriate precautions to prevent pollution of the marine environment
- 12 Monitor the selection and use of materials, tools and other equipment required for the maintenance of the seaworthiness of a vessel

## Evidence Guide

### Evidence Guide

### TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL

*The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.*

<p><b>1 Critical aspects of evidence required to demonstrate competency in this unit</b></p>	<p>Assessment must confirm appropriate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>a Manage the maintenance system of a vessel</li> <li>b Manage the docking and slipping of a vessel</li> <li>c Manage the conduct of inspection and maintenance procedures</li> <li>d Monitor the selection and use of maintenance equipment and materials</li> <li>e Identify typical problems related to the maintenance of a vessel and take appropriate action in conjunction with other officers and crew</li> <li>f Ensure that all required safety, environmental and hazard control precautions and procedures are followed during inspection and maintenance operations</li> <li>g Communicate effectively with others when managing the maintenance procedures on board a vessel</li> </ul>
<p><b>2 Evidence required for demonstration of consistent performance</b></p>	<ul style="list-style-type: none"> <li>a Performance is demonstrated consistently over a period of time and in a suitable range of contexts</li> <li>b Consistently applies underpinning knowledge and skills when:             <ul style="list-style-type: none"> <li>1 managing the maintenance system of a vessel</li> <li>2 managing the docking and slipping of a vessel</li> <li>3 managing the conduct of inspection and maintenance procedures</li> </ul> </li> </ul>



**Evidence Guide**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

- 4 monitoring the selection and use of maintenance equipment and materials
- 5 identifying typical problems related to the maintenance of a vessel and taking appropriate action in conjunction with other officers and crew
- 6 ensuring that all required safety, environmental and hazard control precautions and procedures are followed during inspection and maintenance operations
- c Shows evidence of application of relevant workplace procedures, including:
  - 1 relevant maritime regulations
  - 2 OH&S regulations and hazard prevention policies and procedures
  - 3 standard operating procedures and work instructions
  - 4 relevant vessel manufacturer's guidelines relating to routine maintenance procedures
  - 5 environmental protection procedures when carrying out maintenance operations

**Evidence Guide (continued)**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

**2 Evidence required for demonstration of consistent performance (continued)**

- d Action is taken promptly to report and/or rectify maintenance problems
- e Work is completed systematically with required attention to detail
- f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions among crew and others

**Evidence Guide (continued)**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

<p><b>3 Context of assessment</b></p>	<p>a Assessment of competency must comply with the assessment requirements of the relevant maritime regulations</p> <p>b Assessment of this unit must be undertaken within relevant marine authority approved and audited arrangements by a registered training organisation:</p> <ol style="list-style-type: none"> <li>1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations</li> <li>2 Appropriate practical assessment must occur:                     <ol style="list-style-type: none"> <li>i at the registered training organisation; and/or</li> <li>ii on an appropriate working or training vessel</li> </ol> </li> </ol>
<p><b>4 Specific resources required for assessment</b></p>	<p>Access is required to opportunities to:</p> <ol style="list-style-type: none"> <li>a participate in a range of exercises, case studies and other simulated practical and knowledge assessments that demonstrate the skills and knowledge to monitor and manage the seaworthiness of a vessel; and/or</li> <li>b monitor and manage the seaworthiness of a vessel on an operational commercial or training vessel during seetime training</li> </ol>

## Range Statement

### Range Statement

### TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL

*The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.*

#### VARIABLE

#### SCOPE

### 1. GENERAL CONTEXT

<b>a. Work must be carried out:</b>	1 in compliance with the relevant maritime regulations
<b>b. Work is performed:</b>	1 within broad operational requirements, with responsibility for own outputs in relation to specified quality standards and responsibility for others in achieving the specified quality and quantity of outcomes
<b>c. Work involves:</b>	1 the monitoring and management of the seaworthiness and related maintenance procedures on board a vessel and the application of solutions to a defined range of unpredictable maintenance problems. Overall management of the routine maintenance and slipping procedures for a vessel is required
<b>d. Work requires:</b>	1 full responsibility for the management of the maintenance and slipping procedures on board a vessel

### 2. WORKSITE ENVIRONMENT

<b>a Vessel may include:</b>	1 any Australian or international commercial vessel
------------------------------	---

**Range Statement**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

<p><b>b Maintenance of a vessel may be carried out:</b></p>	<p>1 while underway 2 when berthed or moored 3 when slipped or in dry dock</p>
<p><b>c Maintenance may include:</b></p>	<p>1 routine maintenance inspections 2 identification of any deterioration of a vessel's structure and fittings 3 repairs of minor faults and imperfections in painted surfaces 4 identification of faulty equipment or fittings and arranging for repair or replacement 5 restoration of weathered surfaces</p>

**Range Statement (continued)**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

<b>VARIABLE</b>	<b>SCOPE</b>
<p><b>c Maintenance may include: (continued)</b></p>	<p>6 application of lubricants to moving parts of vessel's equipment 7 preparation of marine surfaces prior to the application of the prescribed marine coating 8 selection and application of appropriate marine preservatives or finishes for particular surfaces</p>
<p><b>d Maintenance tools and equipment may</b></p>	<p>1 hand tools, including chipping hammers and scrapers 2 greasing and lubrication tools</p>

**Range Statement (continued)**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

<p><b>include:</b></p>	<p>3 electric power tools such as grinders, sanders and drills,</p> <p>4 pneumatic power tools such as grinders, sanders and drills</p> <p>5 marine preservative finish application equipment such as brushes, spay guns, rollers</p> <p>6 rinsing and storing equipment</p> <p>7 protective clothing and equipment such as:</p> <p style="padding-left: 20px;">i eye and ear protection</p> <p style="padding-left: 20px;">ii safety boots and headwear</p> <p style="padding-left: 20px;">iii dust and fume masks</p>
<p><b>e Deterioration of vessel's structure and fittings may include:</b></p>	<p>1 corrosion of hull fittings and equipment</p> <p>2 decay of timber surfaces</p> <p>3 osmosis and underwater blistering of painted and fibreglass finishes</p>
<p><b>f Slipping and docking may involve:</b></p>	<p>1 patent slip</p> <p>2 mobile lift equipment (travel lift)</p> <p>3 lift platforms (hydraulic/cable)</p> <p>4 single point lifts (cranes)</p> <p>5 graving, floating and slave docks</p>
<p><b>g Documentation and records may include:</b></p>	<p>1 relevant maritime regulations</p> <p>2 maintenance schedules and records</p> <p>3 company maintenance procedures</p>

**Range Statement (continued)**

**TDMMB4307A MONITOR AND MANAGE THE SEAWORTHINESS OF THE VESSEL**

<b>VARIABLE</b>	<b>SCOPE</b>
<b>g Documentation and records may include: (continued)</b>	<p>4 vessel and equipment manufacturer's instructions, specifications and recommended procedures</p> <p>5 instructions of relevant maritime authorities related to the maintenance of vessels</p>
<b>h Applicable legislation, regulations and codes may include:</b>	<p>1 IMO STCW Convention and Code related to the seaworthiness of vessels</p> <p>2 relevant sections of AMSA Marine Orders (1997) related to the maintenance of vessels</p> <p>3 relevant international, Commonwealth, State and Territory OH&amp;S legislation</p>

**Unit Sector(s)**

Not applicable.

**Field**

Field B Equipment Checking and Maintenance

**Relationship to other units**

<b>Relationship to other units</b>	The unit may be assessed in conjunction with other units that relate to the functions of the occupation(s) concerned.
------------------------------------	---