



Australian Government

Department of Education, Employment and Workplace Relations

TDMMB3507B EMPLOY DAMAGE CONTROL TECHNIQUES FOR HULL DAMAGE

Revision Number: 1

TDMMB3507B EMPLOY DAMAGE CONTROL TECHNIQUES FOR HULL DAMAGE

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to implement correct damage control procedures following damage to a small commercial vessel's hull.

Application of the Unit

Application of the unit	The unit has applications in the qualification for a Marine Engine Driver Grade 1 as per relevant sections of Part D of the National Standard for Commercial Vessels (i.e. Certificate IV in Transport&Distribution (Marine Engine Driving - Grade 1).
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant sections of State and Territory maritime regulations and NSCV/USL Code for a MED 1.
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Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.</i>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Monitor the condition of the vessel	<ul style="list-style-type: none"> a Work to monitor the condition of the vessel's hull and watertight integrity is planned and carried out as per established procedures and safety regulations b Coverage and frequency of checks and inspections on the vessel's hull complies with company procedures and established safety procedures c Action taken in anticipation of environmental changes is timely and appropriate to the change d Degree of vessel security is commensurate with anticipated weather and sea conditions and necessary vessel operations e Action taken in emergency situations is appropriate to the significance of the situation and designed to maximise watertight integrity f Precautions are taken to ensure that vessel and on-board powered equipment is operated as per manufacturer's instructions and safe working procedures
2 Rectify identified problems with the condition of the vessel	<ul style="list-style-type: none"> a Any deterioration of the vessel's hull, structure or fitting is examined and reported and appropriate action is initiated to fix the identified problem b Appropriate damage control measures are implemented following hull damage to maintain watertight integrity and to control any flooding of the vessel as per established marine practice and vessel's emergency and safety management plans c Repairs and corrosion control are initiated and coordinated in accordance with company procedures and vessel and equipment

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| 2 Rectify identified problems with the condition of the vessel (continued) | <p>manufacturer's instructions</p> <p>d Communication with others concerning the condition of the hull and the seaworthiness of the vessel and related action is clear, concise and made at an appropriate time and place</p> <p>e Records of problems identified and actions taken to carry out repairs and corrosion control and to ensure watertight integrity are complete, accurate and comply with statutory, commercial and company requirements.</p> |
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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Relevant sections of State and Territory marine regulations, NSCV and USL Code
- 2 Relevant OH&S and pollution control legislation, codes of practice, policies and procedures
- 3 Typical procedures for the checking and inspecting a vessel's seaworthiness to ensure compliance with company procedures and established safety rules and regulations
- 4 Damage control measures that may be required to maintain the integrity of the hull in a range of typical emergency situations that could occur on a vessel and the specific action to be taken in the event of flooding of a vessel
- 5 Construction features and materials and stress characteristics for small vessels of up to 1,500 kW propulsion power
- 6 Procedures for the initiation and coordination of repair and/or replacement procedures on board vessels
- 7 Typical corrosion control measures, including surface preparation and painting and antifouling
- 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 The basic properties and application of materials used in vessel construction
- 11 Construction, layout and subdivision requirements of a typical vessel, including freeboard and bulkhead deck, watertight compartments, weathertight compartments and the bulkhead of the vessel
- 12 Principles and procedures to ensure the watertight integrity of a vessel's hull in both normal and emergency situations
- 13 Maritime communication techniques needed when monitoring the condition of a vessel and taking any related action
- 14 Types of records that must be maintained regarding hull damage incidents and inspections of the seaworthiness of a vessel to meet the requirements of the company and regulatory authorities

REQUIRED KNOWLEDGE

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Use verbal communication skills required when applying control techniques for hull damage on a small vessel
- 2 Read and interpret maintenance and service manuals and instructions and equipment specifications and drawings for equipment and machinery, including all required OH&S procedures and precautions
- 3 Read and interpret material safety data sheets
- 4 Observe and interpret indications of damage to a vessel's hull
- 5 Complete any required maintenance records
- 6 Provide leadership to other crew members when applying control techniques for hull damage
- 7 Work safely and collaboratively with others when applying control techniques for hull damage
- 8 Plan and organise the application of control techniques for hull damage
- 9 Monitor the selection and use of relevant tools and equipment as per instructions
- 10 Recognise damage to the hull of a small vessel and take appropriate action as per operating instructions
- 11 Recognise routine problems when applying control techniques for hull damage on a small vessel and take appropriate action
- 12 Adapt to differences in vessels, equipment and machinery and operating and servicing procedures

Evidence Guide

Evidence Guide

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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.

1 Critical aspects of evidence required to demonstrate competency in this unit

- Assessment must confirm appropriate knowledge and skills to:
- a Monitor and evaluate the condition of the hull and the seaworthiness of a small vessel under normal and emergency situations
 - b Identify any damage or deterioration of the vessel's hull, structure or related equipment
 - c Take appropriate preventative and remedial action to maintain the security and watertight integrity of the vessel's hull
 - d Initiate and coordinate measures to control any damage to the hull of a small vessel in accordance with company procedures and manufacturer's instructions
 - e Identify typical problems related to the seaworthiness of a vessel and take appropriate action in conjunction with others
 - f Exercise all required safety, environmental and hazard control precautions and procedures during damage control operations
 - g Communicate effectively with others when taking action to maintain the seaworthiness of the vessel

2 Evidence required for demonstration of consistent performance

- a Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- b Consistently applies underpinning knowledge and skills when:
 - 1 carrying out routine and emergency monitoring of a vessel's hull and seaworthiness
 - 2 identifying and evaluating problems concerning the

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- condition of a vessel and the integrity of its hull and determining appropriate courses of action
- 3 initiating and coordinating any required repair or maintenance activities to ensure the seaworthiness of a vessel
- 4 applying safety precautions relevant to monitoring, repair and maintenance operations
- 5 identifying and implementing improvements to procedures for monitoring the condition of the hull and the seaworthiness of a vessel
- c Shows evidence of application of relevant workplace procedures, including:
 - 1 relevant sections of the State and Territory marine regulations, the National Standard for Commercial Vessels and USL Code
 - 2 OH&S regulations and hazard prevention policies and procedures

Evidence Guide (continued)

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2 Evidence required for demonstration of consistent performance (continued)

- 3 issue resolution procedures
- 4 job procedures and work instructions
- 5 relevant vessel manufacturer's guidelines relating to the watertight integrity of the hull and the seaworthiness the vessel
- 6 quality procedures (where existing)
- 7 procedures to protect the integrity and security of the vessel's hull
- d Action is taken promptly to report and/or rectify problems with the seaworthiness of a vessel and the integrity of its hull

Evidence Guide (continued)

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	<p>in accordance with manufacturer's instructions, statutory requirements and company procedures</p> <p>e Recognises and adapts appropriately to cultural differences on board vessel in behaviour and interactions among officers, crew and passengers, where relevant</p> <p>f Work is completed systematically with required attention to detail</p>
<p>3 Context of assessment</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"> 1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations, and 2 Appropriate practical assessment must occur: <ol style="list-style-type: none"> i at the registered training organisation; and/or ii on an appropriate working or training vessel
<p>4 Specific resources required for assessment</p>	<p>Access is required to opportunities to:</p> <p>a participate in a range of exercises, case studies and other simulated practical and knowledge assessments that demonstrate the skills and knowledge to monitor hull condition and carry out damage control measures in the event of hull damage on a small vessel; and/or</p> <p>b assist in maintaining the hull integrity and seaworthiness of a vessel in a range of operational situations either:</p> <ol style="list-style-type: none"> i using an appropriate simulator over an appropriate range of simulated hull damage situations

Evidence Guide (continued)

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- ii in appropriate practical real or simulated situations on an operational small commercial or training vessel up to 1,500 kW propulsion power

Range Statement

Range Statement

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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	
a. Work must be carried out:	1 in compliance with the relevant sections of the State and Territory marine regulations, the National Standard for Commercial Vessels and USL Code
b. Work is performed:	1 within broad operational requirements, with responsibility for own outputs in relation to specified quality standards and limited responsibility for others in achieving the specified quality and quantity of outcomes
c. Work involves:	1 application of established marine techniques for the damage control of a damaged hull on a small vessel and the application of solutions to a defined range of unpredictable hull damage situations. Planning and administering the damage control procedures is required

Range Statement

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| d. Work requires: | 1 the exercise of some discretion and responsibility for the management of damage control measures in the event of damage to the hull of a small vessel |
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2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian commercial vessel up to 1,500 kW propulsion power
b Damage control measures may need to be exercised:	<ul style="list-style-type: none"> 1 by day or night in both normal and emergency situations 2 under any possible conditions of sea, weather and loading 3 while underway 4 during berthing and unberthing operations 5 while anchoring or mooring
c Damage to the hull of a vessel may occur through:	<ul style="list-style-type: none"> 1 collision with another vessel 2 running aground 3 excessive stress on a vessel's hull structure 4 effects of heavy seas and weather conditions

Range Statement (continued)

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VARIABLE	SCOPE
<p>c Damage to the hull of a vessel may occur through: (continued)</p>	<p>5 deterioration or corrosion of vessel's hull and structure</p> <p>6 explosion on board the vessel</p> <p>7 fire on board the vessel</p> <p>8 failure of pressurised pipes</p>
<p>d Damage control measures in a flooding emergency may include:</p>	<p>1 use of softwood wedges and plugs to reduce water ingress</p> <p>2 application of shoring techniques</p> <p>3 construction and fitting of a leak stopping mat</p> <p>4 temporary repair of a ruptured pressurised pipe</p> <p>5 operation of portable salvage pumps</p>
<p>e Action taken to monitor the condition and seaworthiness of a vessel may include:</p>	<p>1 routine inspections</p> <p>2 checks prior to departure</p> <p>3 checks on completion of a voyage</p> <p>4 checks on completion of maintenance activities</p> <p>5 checks in anticipation of a change in sea and weather conditions</p> <p>6 use of testing tanks to check watertight integrity</p> <p>7 checks during an emergency which may have caused damage or changes to the seaworthiness of the vessel</p>

Range Statement (continued)

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<p>f Repairs and maintenance procedures may include:</p>	<p>1 repairs to equipment, components, hull and vessel's structure</p> <p>2 basic surface repairs</p> <p>3 replacement of faulty equipment or components</p>
<p>g Documentation and records may include:</p>	<p>1 vessel's damage control and emergency procedures</p> <p>2 vessel's log</p> <p>3 company procedures for monitoring of condition and seaworthiness of vessel</p> <p>4 vessel and equipment manufacturer's instructions, specifications and recommended procedures</p> <p>5 maintenance schedules and records</p>

Range Statement (continued)

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VARIABLE	SCOPE
<p>g Documentation and records may include: (continued)</p>	<p>6 relevant sections of the State and Territory marine regulations, the National Standard for Commercial Vessels and USL Code</p> <p>7 Notices and instructions of relevant maritime authorities related to the seaworthiness of vessels</p> <p>8 relevant Australian and international standards</p>

Range Statement (continued)

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h Applicable legislation, regulations and codes may include:	<ol style="list-style-type: none"> 1 State and Territory marine regulations related to the operation of small vessels 2 National Standard for Commercial Vessels and USL Code 3 relevant Commonwealth, State and Territory OH&S legislation
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Unit Sector(s)

Not applicable.

Field

Field B Equipment Checking and Maintenance

Relationship to other units

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