



Australian Government

MARN011 Maintain seaworthiness of the ship (ship construction)

Release: 1

MARN011 Maintain seaworthiness of the ship (ship construction)

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 maintain the seaworthiness of the ship with regard to ship construction, inspection and reporting of defects and damage to ship cargo spaces, hatch covers and ballast tanks.

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

- Master of a commercial vessel less than 80 metres in length within the exclusive economic zone (EEZ)
- Master of a commercial vessel less than 500 gross tonnage (GT)
- Watchkeeper Deck.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit.

- Regulatory requirements include STCW International Maritime Organization (IMO) model course competencies and areas of knowledge, understanding and proficiency, together with the estimated total hours required for lectures and practical exercises. Teaching staff should note that timings are suggestions only and should be adapted to suit individual groups of trainees depending on their experience, ability, equipment and staff available for training.

Near Coastal Qualifications:

- This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as a Master less than 80 metres Near Coastal as defined in the Marine Order 505 (Certificates of competency - National Law) 2013.

Blue Waters Qualifications:

- This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as a Master of a commercial vessel less than 500 gross tonnage (GT) or Watchkeeper Deck and to meet regulatory requirements this unit must be delivered consistent with Marine Orders and with the relevant sections of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

Pre-requisite Unit

Not applicable.

Competency Field

N – Seamanship

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

- | | |
|---|---|
| 1 Check weather tight and watertight integrity of ship | 1.1 Inspections of ship are planned and carried out according to regulatory and organisational requirements

1.2 Elements of the vessel structure critical to the safety of the vessel are identified

1.3 Structural members of ship are inspected to establish weather tight and watertight requirements of ship

1.4 Checks are carried out to confirm weather tight and watertight integrity of ship at all times |
| 2 Take action to meet environmental changes | 2.1 Anticipated sea and weather conditions are analysed to identify situations that may impact on ship weather tight and watertight integrity

2.2 Effect of severe wind and rolling in associated sea conditions on ship weather tight and watertight integrity is recognised

2.3 Effect of water on deck, on ship weather tight and watertight integrity is ascertained and taken into consideration

2.4 Appropriate action is taken to maintain ship weather tight and watertight integrity according to organisational procedures and damage control plans

2.5 Degree to which vessel is secured is appropriate to prevailing and forecast conditions |

- 2.6** Location of defects and damage caused by vessel operations and the environment are ascertained
 - 2.7** Defects and damage to ship are identified, rectified and reported according to organisational procedures
 - 2.8** Irregularities beyond own ability to rectify are recognised in time to enable remedial action to be taken
- 3 Maintain records**
 - 3.1** Relevant documents and records are completed and maintained, as required, according to regulatory and organisational requirements
 - 3.2** Relevant documents are sent to appropriate bodies and copies are filed according to regulatory and organisational requirements
 - 3.3** Documents are stored 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.

Unit Mapping Information

This unit replaces and is equivalent to MARN005 Maintain seaworthiness of a vessel.

Links

Companion Volume implementation guide can be found in VetNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>

Assessment Requirements for MARN011 Maintain seaworthiness of the ship (ship construction)

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- adhering to procedures to distinguish between normal and defective and damaged parts of ship
- completing required records
- detecting defects to ballast water tank vents
- detecting defects and damage, including:
 - cargo operation damage
 - damage caused by corrosion
 - damage to structures through heavy weather
- developing damage control plans
- developing effective planning documentation
- identifying elements of the vessel structure that are critical to vessel safety
- inspecting and reporting defects and damage to cargo spaces, hatch covers and ballast tanks
- interpreting and following procedures for the coordination of planned maintenance processes
- preparing appropriate reports on inspection and maintenance outcomes
- reading and interpreting ship specifications and drawings
- taking actions to ensure and maintain the weather tight and watertight integrity of ship.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- application of appropriate safety, environment and hazard control procedures
- causes of corrosion to cargo spaces and ballast tanks, and how corrosion can be identified and prevented
- characteristics of stress and the principal stresses acting on a ship
- corrosion control methods
- coverage of tests, including areas requiring inspection under the planned maintenance schedule and survey requirements
- damage control measures that may be required to maintain the integrity of the hull in a range

of typical emergency situations, including damage control plans and safety management systems (SMS)

- defects and damage, including:
 - corrosion to operating or structural parts of the ship
 - damage to the ship through cargo shift, loading and unloading operations
 - hatch cover seals
 - structural damage through collision, grounding or fire
 - watertight door seals and closing arrangements
- fundamental actions to be taken in the event of partial loss of intact buoyancy
- fundamentals of watertight integrity, including:
 - appropriate equipment is in readiness for damage control
 - avoiding adverse weather
 - checking the watertight security of the ship
 - closing openings
 - free surface is minimised in ballast and fuel tanks
 - freeing ports allow water taken on deck to clear
 - passenger distribution does not exceed allowed limits
 - procedures for restoring or managing weather tight and watertight integrity during an emergency
 - stores, cargo and equipment are properly stowed and lashed
 - tanks and other watertight areas
- inspections of ship, including:
 - ballast tanks
 - cargo space
 - hatch covers
 - hull and fittings during dry-docking
 - inspections required after completion of maintenance work
 - inspections required after docking prior to re-floating
 - inspections to be made after any situation which may have caused damage to the ship
 - order of inspection
 - pre-sailing inspections
 - regulatory inspections
 - routine inspections
 - time periods
- maintenance procedures contained in the SMS
- one's surroundings and changes to these surroundings
- planned maintenance system for ships and associated maintenance inspection procedures
- principal materials, properties and application of materials used in the construction of a ship
- principal structured members and layout of a ship and the proper names for various parts
- principle features of vessel structure and construction

- principles and procedures to ensure the watertight integrity of ship hull in both normal and emergency situations
- principles of load lines and draught marks
- principles of rudder and propellers
- procedures for checking and inspecting ship seaworthiness, including reliable detection of defects and damages
- purpose of the enhanced survey program
- situations that may jeopardise ship weather tight and watertight integrity, including:
 - collision, grounding or fire
 - failure to conduct appropriate inspections
 - heavy weather damage
- structural members of ship, ship construction, layout and subdivision of a ship, including:
 - ballast tanks
 - bow and stern regions
 - bulkheads, including the collision bulkhead and bulkhead deck
 - cargo holds
 - cargo tanks
 - fittings
 - frames
 - freeboard deck
 - freshwater tanks
 - hatch and tank openings
 - hull structure
 - longitudinal and transverse girders
 - shell plating
 - tank tops
 - various types of keel arrangements
 - watertight and weather tight compartments
- work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

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.

Practical assessment must occur in a workplace, or realistic simulated workplace, under the

normal range of workplace conditions.

Simulations and scenarios may be used where situations cannot be provided in the workplace or may occur only rarely, in particular for situations relating to emergency procedures and adverse weather conditions where assessment would be unsafe, impractical or may lead to environmental damage.

Resources for assessment must include access to:

- applicable documentation, such as legislation, regulations, codes of practice, workplace procedures and operational manuals, including:
 - equipment manufacturer instructions
 - logbooks, including oil record and garbage logbooks as applicable
 - organisational operation orders under the International Safety Management (ISM) Code for the Safe Operation of Ships and for Pollution Prevention
 - plans and drawings
- tools, equipment, machinery, materials and relevant personal protective equipment (PPE) currently used in industry.

Links

Companion Volume implementation guide can be found in VetNet -

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