



Australian Government

MARA022 Manage loading, discharging and stowing of cargo

Release: 2

MARAO22 Manage loading, discharging and stowing of cargo

Modification History

Release 2. This is the second release of this unit of competency in the MAR Maritime Training Package.

- Minor statement changes in unit Application
- Minor statement change in Knowledge Evidence.

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 manage the loading, discharging and stowage of cargo to prevent damage or deterioration of cargo and to deliver it, as far as is possible, in as good a condition and order as it was when received onboard.

It includes planning the stow, planning load/unload with stevedores, preparing for loading, controlling loading/unloading of cargo, managing ballast management operations and monitoring care of cargo during voyage.

This unit applies to people working in the maritime industry in the capacity of Master on commercial vessels up to 45 metres Near Coastal.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit.

This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as a Master up to 45 metres Near Coastal as specified in Marine Order 505.

Seafarers seeking certification should check with AMSA.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo and Vessel Stability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Plan the stow

- 1.1 Loading manual is interpreted to determine operational loading conditions
- 1.2 Still water shear forces and bending moments in any load or ballast condition are identified and not exceeded
- 1.3 Load is planned to ensure stresses in vessel are minimised by evenly distributing cargo
- 1.4 Load is planned to avoid incompatible cargo stowage
- 1.5 Regulations relating to hazardous materials/dangerous goods are observed, where appropriate
- 1.6 Load is planned for unloading sequence
- 1.7 Vessel cargo carrying capacity is not exceeded for appropriate load line
- 1.8 Vessel trim is calculated to allow for optimum vessel performance at sea

2 Plan load/unload with stevedores

- 2.1 Available port/vessel cargo handling gear and equipment are determined
- 2.2 Handling capacity of cargo handling gear and equipment are established
- 2.3 Pumping capacity of cargo pumps is verified
- 2.4 Availability and status of human resources are resolved
- 2.5 Cargo manifest is made available
- 2.6 Cargo stowage plan is completed and agreed with stevedores
- 2.7 Stability calculation is made and checked against vessel stability information manual
- 2.8 Notice of readiness to load/unload is provided

3 Prepare for loading

- 3.1 Holds are checked to ensure they are clean, dry and free

- of odour
- 3.2 Safety arrangements in holds are verified to ensure they are operational
 - 3.3 Supplies of dunnage and mats are reviewed to ensure there are sufficient available
 - 3.4 Bilges are covered with tarpaulins/wrappers before loading
 - 3.5 Checks are made to ensure cargo is correctly identified, inspected and confirmed against documentation
 - 3.6 Preparations for loading are monitored according to stowage plan and organisational procedures
- 4 Control loading/unloading of cargo**
- 4.1 Instructions are given to crew and stevedores involved in cargo loading/unloading according to cargo stowage plan
 - 4.2 Compliance with regulations, procedures and instructions pertaining to type of cargo being handled is managed during loading/unloading operations
 - 4.3 Loading/unloading is monitored to ensure loading rate is not exceeded in the case of bulk or liquid cargo
 - 4.4 Vessel stability is observed during loading/unloading operations
 - 4.5 Loading/unloading operations are checked against stowage plan
 - 4.6 Cargo is secured and lashed according to lashing plan
 - 4.7 All cargo handling documentation is completed according to organisational procedures and regulatory requirements
- 5 Manage ballast management operations**
- 5.1 Ballast discharge requirements of port authority are complied with
 - 5.2 Ballast management activities are monitored according to organisational procedures, ballast water management plan and port authority requirements
 - 5.3 Ballast management problems are identified and appropriate actions are taken to minimise risk to the environment

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| 6 Monitor care of cargo during voyage | 6.1 Vessel plan for care of cargo during the voyage is implemented according to organisational and customer requirements, and relevant regulations |
| | 6.2 Ventilation and humidity control systems are checked |
| | 6.3 Actions required to maintain the wellbeing of cargo during the voyage is initiated according to customer requirements and organisational procedures |
| | 6.4 Compliance with safety and hazard minimisation procedures and regulations related to cargo care is managed at all times during the voyage to maintain safety of personnel, cargo and vessel |
| | 6.5 Appropriate action is taken in the event of a cargo-related incident or emergency to rectify problem, secure cargo and maintain safety of vessel and personnel |

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 MARA003 Manage loading, discharging and stowing of cargo.

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 MARAO22 Manage loading, discharging and stowing of cargo

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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:

- developing effective cargo stowage plans, including:
 - cargo weight
 - correct description and stowage of hazardous and dangerous goods
 - description of cargo to be loaded
 - load/discharge port
 - segregation of non-compatible cargo
- monitoring use of cargo handling gear and equipment involved in loading, stowage, security and unloading of cargo
- using and applying instructions, regulations, procedures and information relevant to loading, stowage, security and unloading of cargo
- using stability manual and ensuring stability calculations are within appropriate parameters for proposed cargo operation.

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:

- actions to be taken in the event of cargo-related incidents or emergencies, including:
 - cargo handling gear failure
 - cargo shift
 - leakage
 - spontaneous combustion
- ballast management issues and procedures, including:
 - ballast water management plan

- confirming that the stowage plan conforms to stability requirements at all stages of loading and discharging
- contaminated ballast
- failure of ballast pumps
- cargo handling documentation requirements
- design of vessel hold
- effects on cargo handling of sea conditions, wind and weather
- effects of different types of cargo operations on vessel trim and stability
- effects upon stability during loading and discharging operations, including heeling moments from gear and loads
- emergency procedures for incidents involving dangerous and hazardous cargo, including:
 - enhanced survey regime
 - safety data sheets (SDS)/material safety data sheets (MSDS)
 - monitoring of cargo stowage areas for damage, defects and corrosion, including causes and prevention
 - safe working loads
- hazardous materials/dangerous goods, including:
 - any cargo described in the International Maritime Dangerous Goods (IMDG) Code as hazardous or dangerous
 - relevant documentation
- homogeneous loading
- main stresses set up by cargo, hogging, sagging and shearing
- methods of handling various types of cargo
- methods of handling and problems related to loading, stowage, security and unloading of cargo, including:
 - bulk cargo
 - containerised cargo
 - deck cargo
 - liquid cargo
 - refrigerated cargo
 - any other material, equipment or machinery that may be safely handled and stowed on the vessel
- operational characteristics of different types of shipboard and terminal-based cargo handling equipment and facilities
- principles of cargo care for various types of cargo monitoring procedures and scheduling of inspections
- procedures for carrying out calculations involving weights, capacities, stowage factors and load densities
- regulations relating to hazardous materials/dangerous goods, including the IMDG Code
- relevant sections of applicable maritime regulations
- relevant work health and safety (WHS)/occupational health and safety (OHS) and cargo handling legislation, codes of practice, policies and procedures

- shipboard and terminal-based cargo handling equipment involved in loading, stowage, security and unloading of cargo, including:
 - cargo pumps
 - cranes
 - derricks
 - grabs
 - hooks, wires and shackles
 - slings
- standard stowage position numbering systems used on container vessels
- static and dynamic loads
- survey and inspection requirements for cargo handling equipment
- types of lashing and securing devices
- typical types and sizes of shipping containers
- use of cargo handling gear including tackles
- usual methods of packing, loading and discharging, stowage and dunnage
- various types of cargo likely to be carried; their peculiar characteristics, liability to damage, decay or deterioration; their measurements; their hazards and problems, and appropriate preventative and remedial actions and solutions
- ways of restricting vessel stress levels within permitted levels within permitted limits during loading/discharging cargo.

Assessment Conditions

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

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in 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, 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:

- a commercial vessel greater than or equal to 12 metres in length
- applicable documentation, such as legislation, regulations, codes of practice, safety management system (SMS), workplace procedures and operational manuals, including:
 - IMDG Code
 - International Maritime Solid Bulk Cargoes Code (IMSBC)

- stability books
- tools, equipment, machinery, materials and personal protective equipment (PPE) currently used in industry.

Links

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