



**Australian Government**

# **MARA010 Manage loading, unloading and stowage of cargo**

**Release: 1**

# MARA010 Manage loading, unloading and stowage of cargo

## Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package Release 3.0.

## Application

This unit involves the skills and knowledge required to manage the loading, stowage, securing and care of cargo during the voyage and the unloading of cargo, according to the cargo plan, organisational procedures and vessel stowage limitations.

This unit applies to the work of a Watchkeeper Deck and Master up to 500 gross tonnage.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## 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.                                                                                                                                                                                                                                                                                                                   |
| <b>1 Review cargo plan</b>                | <p>1.1 Cargo plan is interpreted to determine required cargo operations</p> <p>1.2 Characteristics of cargo being transported are identified and the type, severity and impact of the hazard posed by cargo on safety, the environment, vessel operations and personnel are established</p> <p>1.3 Cargo plan is evaluated to ensure regulations relating to hazardous materials/dangerous goods are observed</p> |

- 1.4 Cargo plan is assessed to ensure incompatible cargo stowage is avoided
- 1.5 Cargo plan is checked to ensure unloading sequence is effective
- 2 Prepare for loading**
  - 2.1 Holds are checked to ensure they are clean, dry and free of smell
  - 2.2 Safety arrangements are verified to ensure they are operational
  - 2.3 Supplies of cargo protection and securing material are reviewed to ensure there are sufficient available
  - 2.4 Bilge suction are protected before loading
  - 2.5 Checks are made to ensure cargo is correctly identified, inspected and confirmed against documentation
  - 2.6 Preparations for loading are monitored according to stowage plan and organisational procedures
  - 2.7 Ballast discharge plan is identified and confirmed and appropriate actions to support this plan are undertaken
- 3 Supervise loading/unloading of cargo**
  - 3.1 Instructions are given to crew and stevedores involved in cargo loading/unloading according to cargo stowage plan
  - 3.2 Compliance with regulations, procedures and instructions pertaining to type of cargo being handled is managed during loading/unloading operations
  - 3.3 Loading/unloading is monitored to ensure loading rate is not exceeded
  - 3.4 Vessel stability is observed during loading/unloading operations
  - 3.5 Loading/unloading operations are checked against cargo plan
  - 3.6 Cargo is secured according to cargo plan
  - 3.7 Cargo handling documentation is completed according to organisational procedures and regulatory requirements
  - 3.8 Transfer of cargo is monitored to prevent hazards
  - 3.9 Gas monitoring equipment is regularly inspected and used according to organisational procedures, as required

- 4 Monitor care of cargo during voyage**
  - 4.1 Plan for care of cargo during voyage is implemented according to organisational and customer requirements, and relevant regulations
  - 4.2 Ventilation and humidity control systems are checked
  - 4.3 Actions required to maintain the safety and security of cargo during the voyage are initiated according to customer requirements and organisational procedures
  - 4.4 Compliance with safety and hazard minimisation procedures and regulations related to cargo care is managed at all times during the voyage to maintain the safety of personnel, cargo and vessel
  - 4.5 Safety procedures are followed and appropriate action is taken when defects or damage to cargo are detected
- 5 Take precautions to prevent pollution of the environment**
  - 5.1 Procedures to prevent pollution are identified and observed at all times
  - 5.2 Measures to prevent pollution during normal and emergency situations are applied according to regulatory requirements and organisational procedures
  - 5.3 All relevant information is immediately reported to appropriate persons when a vapour leak or cloud is detected or a malfunction has occurred that poses a risk of a vapour leak or cloud
  - 5.4 Shore-based response personnel are promptly notified when a vapour leak or cloud occurs

## 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.

Cargo plan includes:

- 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
- stowage of refrigerated containers

Cargo includes one or more of the following:

- bulk cargo
- chemicals and oils
- containerised cargo
- deck cargo
- heavy lift cargo
- liquefied gas
- liquid cargo
- material, equipment or machinery that may be safely handled and stowed on vessel
- refrigerated cargo

Hazardous materials/dangerous goods include:

- any cargo described in the International Maritime Dangerous Goods (IMDG) Code as hazardous or dangerous

Incompatible cargo stowage includes one or more of the following:

- cargo liable to taint
- dangerous and hazardous goods

Cargo handling documentation includes one or more of the following:

- cargo gear register
- cargo receipts
- Cargo Securing Manual
- logbook entries
- Note of Protest
- Notice of Readiness to load or discharge
- operation orders and instructions
- safety data sheets (SDSs)/material safety data sheets (MSDSs)
- safety management system relating to cargo carriage
- ship/shore safety checklists

Actions required to maintain the wellbeing of cargo include one or more of the following:

- maintaining adequate ventilation
- monitoring cargo spaces
- temperature control of refrigerated or cooled cargo

Defects or damage to cargo include one or

- damage caused by cargo movement

more of the following:

- deterioration of perishable cargo
- water ingress

## Unit Mapping Information

No equivalent unit.

## 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 MARAO10 Manage loading, unloading and stowage of cargo

## Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package Release 3.0.

## Performance Evidence

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

- applying international regulations, codes and standards concerning the safe handling, stowage, securing and transport of bulk cargo and dangerous, hazardous, and harmful cargo
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices
- carrying out cargo operations according to cargo plan or other documents and established safety rule/regulations, equipment operating instructions and shipboard stowage limitations
- establishing and maintaining effective communications during loading, stowage, transportation and unloading
- initiating timely action in response to defects or damage
- monitoring and anticipating problems and risks associated with loading, unloading, stowage and care of cargo
- monitoring use of equipment in loading, unloading, stowage and care of cargo
- reading, interpreting and applying instructions, regulations, procedures and information associated with loading, unloading, stowage and care of cargo
- reading and interpreting safety data sheets (SDSs)/material safety data sheets (MSDSs), relevant cargo-related hazards to vessel and to personnel, and taking appropriate action according to organisational procedures
- interpreting and applying knowledge of bulk ship, chemical and oil tanker, and liquefied gas tanker layouts, cargo features, characteristics and hazards, and related hazard prevention strategies to duties on various types of vessel
- recognising problems and hazards that can arise when managing safety on a liquefied gas tanker, taking appropriate remedial action and initiating appropriate solutions.

## Knowledge Evidence

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

- ballast management issues and procedures
- bulk ships, chemical and oil tanker layouts, liquefied gas tanker layouts, cargo features and characteristics
- dangerous goods classification, signage, stowage and segregation requirements under the International Maritime Dangerous Goods (IMDG) Code and relevant Marine Orders
- cargo handling documentation requirements
- cargo lifting equipment and safe working loads
- hazards and control measures associated with bulk ships, chemical and oil tanker cargo loading, and liquefied gas tanker cargo loading, stowage and unloading
- relevant firefighting operations and the use of firefighting equipment
- effect of cargo, including heavy lifts, on the seaworthiness and stability of the vessel
- effects of different types of cargo operations on vessel trim and stability
- effects on cargo handling of sea conditions, wind and weather
- effects on stability during loading and discharging operations including heeling moments from gear and loads
- methods of caring for various types of cargo
- operational characteristics of different types of shipboard and terminal-based cargo handling equipment and facilities
- procedures for carrying out calculations involving weights, capacities, stowage factors
- relevant firefighting operations and the use of firefighting equipment
- relevant sections of maritime regulations, codes and conventions related to chemical and oil tankers, and liquefied gas tankers
- relevant WHS/OHS and cargo handling legislation, codes of practice, policies and procedures
- safe handling, stowage and securing of cargo including dangerous, hazardous and harmful cargo, and their effect on the safety of life and the vessel
- standard stowage position numbering systems used on container vessels
- typical cargo handling problems and hazards, and appropriate preventative and remedial actions and solutions
- typical types and sizes of shipping containers
- usual methods of container packing, loading and discharging, stowage, dunnaging
- various types of cargo likely to be carried; their peculiar characteristics, liability to damage, decay or deterioration; their measurements, hazards and problems; appropriate preventative and remedial action and solutions
- ways of restricting vessel stress levels within permitted levels within permitted limits during loading/discharging cargo.

## Assessment Conditions

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

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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.

Assessment must occur in workplace operational situations or where these are not available, in simulated workplace operational situations or an industry-approved marine operations site.

Resources for assessment must include access to:

- gas monitoring equipment including:
  - gas monitoring instruments
  - oxygen indicators
- firefighting equipment including:
  - firefighting agents
  - fixed dry chemical systems
  - fixed foam systems
  - portable foam systems
- tools, cargo handling equipment, piping systems and valves and personal protective equipment currently used in industry
- documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals, including SDSs/MSDSs.
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