



Australian Government

MARA003 Manage loading, discharging and stowing of cargo

Release: 1

MARAO03 Manage loading, discharging and stowing of cargo

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to manage the loading, discharging and stowage of cargo to prevent damage or deterioration and to deliver it, as far as is possible, in as good a condition and order as it was when received aboard.

This unit applies to people working in the maritime industry in the capacity of Master on a range of vessels up to 80 metres.

This unit has links to legislative and certification requirements.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo and Vessel Stability

Unit Sector

Not applicable.

Elements and 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 known 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

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| | 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 is determined |
| | 2.2 | Handling capacity of cargo handling gear and equipment is established |
| | 2.3 | Pumping capacity of cargo pumps is verified |
| | 2.4 | Availability and status of human resources is 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 smell |
| | 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 and port authority requirements
 - 5.3 Ballast management problems are identified and appropriate action is taken to minimise risk to the environment
- 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 Action 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

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Cargo includes one or more of the following:

- 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

Hazardous materials/dangerous goods include one or more of the following:

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

Cargo handling gear and equipment includes one or more of the following:

- cargo pumps
- cranes
- derricks
- grabs
- hooks, wires and shackles
- slings

Cargo stowage plan must include:

- 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

Ballast management problems include one or more of the following:

- confirmation that the stowage plan conforms to stability requirements at all stages of loading and discharging
- contaminated ballast
- failure of ballast pumps

Cargo-related incidents or emergencies include one or more of the following:

- cargo handling gear failure
- cargo shift
- leakage
- spontaneous combustion

Unit Mapping Information

This is a new unit. This unit is equivalent to MARA4001A 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 MARAO03 Manage loading, discharging and stowing of cargo

Modification History

Release 1. New unit of competency.

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 planning document
- identifying and solving problems related to loading, stowage, security and unloading of cargo
- interpreting stability manual and ensuring stability calculations are within appropriate parameters for proposed cargo operation
- monitoring use of equipment involved in loading, stowage, security and unloading of cargo
- producing reliable documentation
- reading, interpreting and applying instructions, regulations, procedures and information relevant to loading, stowage, security and unloading of cargo.

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:

- ballast management issues and procedures
- cargo handling documentation requirements
- container position numbering
- 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
- homogenous loading
- main stresses set up by cargo, hogging, sagging and shearing
- methods of;
 - handling various types of cargo
 - caring for various types of cargo
- operational characteristics of different types of shipboard and terminal-based cargo handling equipment and facilities
- principles of cargo care

- procedures for carrying out calculations involving weights, capacities, stowage factors, load densities
- 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
- standard stowage position numbering systems used on container vessels
- static and dynamic loads
- survey and inspection requirements for cargo handling equipment
- types of lashing devices
- typical cargo handling problems and hazards, and appropriate preventative and remedial actions and solutions
- typical types and sizes of shipping containers
- usual methods of packing, loading and discharging, stowage, dunnaging etc.
- use of cargo handling gear including purchases and tackles
- 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 action and solutions
- ways of restricting vessel stress levels within permitted levels within permitted limits during loading/discharging cargo.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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.

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

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