



Australian Government

MARA025 Monitor, loading, unloading, securing and stowage of cargo

Release: 2

MARAO25 Monitor, loading, unloading, securing and stowage 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 Performance Criteria 4.5
- Minor statement changes in Performance Evidence
- Minor changes 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, 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 people working in the maritime industry in the capacity of:

- Master of a commercial vessel up to 100 metres Near Coastal
- Master of a commercial vessel up to 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 up to 100 metres Near Coastal as specified in Marine Order 505.

Blue Waters Qualifications:

- This unit is one of the requirements to obtain AMSA certification as a Master of a commercial vessel up to 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).

Training providers seeking to offer this unit of competency must gain AMSA approval before the unit is offered.

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

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Develop cargo plan

1.1 Cargo plan is developed to determine required cargo operations

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

1.3 Cargo plan is evaluated to ensure regulations relating to hazardous materials and/or dangerous goods are complied with

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 odour

- 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

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| | 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 actions are 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.

Unit Mapping Information

This unit replaces and is equivalent to MARA010 Manage loading, unloading and stowage 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 MARAO25 Monitor, loading, unloading, securing and stowage 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:

- applying actions required to maintain the wellbeing of cargo
- 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 safe 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, including identifying incompatible cargo stowage
- developing a cargo plan including:
 - determining cargo operations requirements
 - identifying relevant cargo handling documentation
- establishing and maintaining effective communications during loading and/or unloading, stowage and transportation
- identifying defects or damage to cargo and initiating timely actions in response to defects or damage
- interpreting and applying knowledge of bulk vessel, including bulk grain, 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
- 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 and interpreting safety data sheets (SDS)/material safety data sheets (MSDS), relevant cargo-related hazards to vessel and to personnel, and taking appropriate actions according to organisational procedures

- reading, interpreting and applying instructions, regulations, procedures and information associated with loading, unloading, stowage and care of cargo
- recognising problems and hazards that can arise when managing safety on a liquefied gas tanker, taking appropriate remedial actions 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 and performance criteria and include knowledge of:

- ballast management issues and procedures
- bulk vessels, including bulk grain, chemical and oil tanker layouts, liquefied gas tanker layouts, cargo features and characteristics
- cargo measurements and calculations involving weights, capacities and stowage factors in accordance with organisational procedures
- cargo care including:
 - inspection and preparation of holds
 - refrigerated cargo
 - safe handling, stowage and securing of cargo including:
 - dangerous goods, hazardous material and harmful cargo, and their effect on the safety of life and the vessel
 - segregation and separation of cargo
 - standard stowage position numbering systems used on container vessels
 - ventilation and control
- cargo handling documentation
- cargo hazards, problems and risk control measures including:
 - appropriate preventative and remedial actions and solutions
 - obstructing view from navigating bridge or overside at the bow defects or damage to cargo, including:
 - damage caused by cargo movement
 - deterioration of perishable cargo
 - water ingress
- cargo lifting and handling equipment safety and safe working loads including:
 - appropriate preventative and remedial actions and solutions
 - operational characteristics of different types of shipboard and terminal-based cargo handling equipment and facilities
 - typical cargo handling problems, risks and hazards
- cargo plan 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
- stowage of refrigerated containers
- fundamentals of:
 - cargo operations for oil, chemical and liquefied gas tankers, including cargo preparation and carriage
 - physical properties of oil, chemical and liquefied gases
 - types of oil, chemical and liquefied gas tankers, general arrangement and construction
- hazardous materials/dangerous goods classification, signage, stowage and segregation requirements under the International Maritime Dangerous Goods (IMDG) Code and relevant Marine Orders
- hazards and risk control measures associated with bulk vessels including:
 - bulk grain, chemical and oil tanker cargo loading, and liquefied gas tanker cargo loading, unloading and stowage
- incompatible cargo stowage, including:
 - cargo liable to taint
 - hazardous material/dangerous goods
- inspection and preparation of holds
- methods of caring for various types of cargo, including:
 - blocking
 - chocking
 - lashing
 - shoring
 - tombing
- maritime regulations, codes and conventions related to chemical and oil tankers, and liquefied gas tankers
- methods of stowage and securing of:
 - heavy lifts
 - heavy loads
 - vehicles and trailers
- oil tanker piping and pumping arrangements, including:
 - cargo piping systems
 - cargo pumping systems
 - cargo pumps
 - tanker arrangement
- precautions before entering enclosed and contaminated spaces
- precautions to prevent pollution of the environment from the release of oil, chemicals and liquefied gases
- relevant WHS/OHS and cargo handling legislation, codes of practice, policies and procedures
- types of cargo likely to be carried and their peculiar characteristics including:
 - bulk cargo
 - liability to damage

- chemical and oil
- decay or deterioration
- shipping containers
- usual methods of container packing, loading and discharging, stowage and dunnaging
- vessel stability including:
 - effect of cargo, including heavy lifts and deck cargo on the seaworthiness, draught, trim and stability of the vessel
 - effects of a concentrated load which can be spread over a wider area by the use of dunnage and deck shoring taking into consideration the position of girders, transverses and longitudinals under the tank top
 - 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 and draught during loading and discharging operations, including heeling moments from gear and loads
 - ways of restricting vessel stress levels within permitted levels within permitted limits during loading/discharging cargo.

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

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