



**Australian Government**

# **MARA5002A Monitor loading, unloading and stowage of cargo**

**Release 1**

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## Modification History

Release 1

This is the first release of this unit.

## Unit Descriptor

This unit involves the skills and knowledge required to monitor 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.

## Application of the Unit

This unit has application for a Watchkeeper Deck and Master < 500 GT.

## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- |                            |                                                                             |
|----------------------------|-----------------------------------------------------------------------------|
| <b>1 Review cargo plan</b> | 1.1 <i>Cargo plan</i> is interpreted to determine required cargo operations |
|                            | 1.2 Cargo plan is checked to ensure cargo is evenly distributed             |

- 1.3 Cargo plan is assessed to ensure ***incompatible cargo stowage*** is avoided
- 1.4 Cargo plan is evaluated to ensure regulations relating to ***hazardous materials/dangerous goods*** are observed, where appropriate
- 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 in holds 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 Bilges 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 understood 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 the loading rate is not exceeded in the case of bulk or liquid cargo
  - 3.4 Vessel stability is observed during loading/unloading operations
  - 3.5 Loading/unloading operations are checked against stowage plan
  - 3.6 Cargo is secured and lashed according to lashing plan
  - 3.7 ***Cargo handling documentation*** is completed according to organisational procedures and regulatory requirements

- 4 Monitor care of cargo during voyage**
- 4.1 Vessel 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 wellbeing 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 Appropriate action is taken when ***defects or damage to cargo*** are detected

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required Skills:

- Carry out cargo operations according to cargo plan or other documents and established safety rule/regulations, equipment operating instructions and shipboard stowage limitations
- Establish and maintain effective communications during loading and unloading
- Handle dangerous, hazardous and harmful cargo to comply with international regulations, recognised standards and codes of safe practice
- Identify and solve problems associated with loading, unloading, stowage and care of cargo
- Monitor and anticipate problems and risks associated with loading, unloading, stowage and care of cargo
- Monitor use of equipment in loading, unloading, stowage and care of cargo
- Read, interpret and apply instructions, regulations, procedures and information associated with loading, unloading, stowage and care of cargo

### Required Knowledge:

- Ballast management issues and procedures
- Cargo handling documentation requirements
- Cargo lifting equipment and safe working loads
- Container position numbering
- 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
- Methods of handling 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
- 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
- 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

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, the required skills and knowledge, the range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

The evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required Knowledge and include:

- attention to detail when completing documentation
- initiating timely action in response to defects or damage.

### **Context of and specific resources for assessment**

Performance is demonstrated consistently over time and in a suitable range of contexts.

Resources for assessment include access to:

- industry-approved marine operations site where monitoring loading, unloading, stowage and care of cargo on a vessel may be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities
- range of relevant exercises, case studies and/or other simulated practical and knowledge assessments
- appropriate range of relevant operational situations in the workplace.

In both real and simulated environments, access is required to:

- relevant and appropriate materials and equipment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

### **Method of assessment**

Practical assessment must occur in an:

- appropriately simulated workplace environment and/or
- appropriate range of situations in the workplace.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate to this unit:

- direct observation of the candidate monitoring loading, unloading, stowage and care of cargo on a vessel
- direct observation of the candidate applying relevant WHS/OHS requirements and work practices.

### **Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

In all cases where practical assessment is used it should be combined with targeted questioning to assess Required Knowledge.

Assessment processes and techniques must be appropriate to the language and literacy requirements of the work being performed and the capacity of the candidate.

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.

- |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cargo plan must include:                                         | <ul style="list-style-type: none"><li>• Cargo weight</li><li>• Correct description and stowage of hazardous and dangerous goods</li><li>• Description of cargo to be loaded</li><li>• Load/discharge port</li><li>• Segregation of non-compatible cargo</li><li>• Stowage of refrigerated containers</li></ul>                                                                                                                                                |
| Incompatible cargo stowage may include:                          | <ul style="list-style-type: none"><li>• Cargo liable to taint</li><li>• Dangerous and hazardous goods</li></ul>                                                                                                                                                                                                                                                                                                                                               |
| Hazardous materials/dangerous goods may include:                 | <ul style="list-style-type: none"><li>• Any cargo described in the IMDG Code as hazardous or dangerous</li></ul>                                                                                                                                                                                                                                                                                                                                              |
| Cargo may include:                                               | <ul style="list-style-type: none"><li>• Bulk cargo</li><li>• Containerised cargo</li><li>• Deck cargo</li><li>• Heavy lift cargo</li><li>• Liquid cargo</li><li>• Refrigerated cargo</li><li>• Any other material, equipment or machinery that may be safely handled and stowed on vessel</li></ul>                                                                                                                                                           |
| Cargo handling documentation may include:                        | <ul style="list-style-type: none"><li>• Cargo gear register</li><li>• Cargo receipts</li><li>• Cargo Securing Manual</li><li>• Log book entries</li><li>• Note of Protest</li><li>• Notice of Readiness to load or discharge</li><li>• Operation orders and instructions</li><li>• Safety data sheets (SDS)/material safety data sheets (MSDS)</li><li>• Safety management system relating to cargo carriage</li><li>• Ship/shore safety checklists</li></ul> |
| Actions required to maintain the wellbeing of cargo may include: | <ul style="list-style-type: none"><li>• Maintaining adequate ventilation</li><li>• Monitoring cargo spaces</li><li>• Temperature control of refrigerated or cooled cargo</li></ul>                                                                                                                                                                                                                                                                            |
| Defects or damage to cargo may                                   | <ul style="list-style-type: none"><li>• Damage caused by cargo movement</li></ul>                                                                                                                                                                                                                                                                                                                                                                             |

include:

- Deterioration of perishable cargo
- Water ingress

## **Unit Sector(s)**

Not applicable.

## **Competency Field**

Handling Cargo and Vessel Stability