



Australian Government

MARA012 Contribute to basic cargo operations on liquefied gas tankers

Release: 1

MARAO12 Contribute to basic cargo operations on liquefied gas tankers

Modification History

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 recognise hazards associated with liquefied gas tankers (basic gas) and to apply appropriate hazard control measures to contribute to safe cargo operation.

This unit applies to people working in the maritime industry in the capacity of:

- Chief Mate
- Deck Officers
- Engineering Officers
- Engineers
- Masters
- Ratings.

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 Chief Mate, Deck Officers, Engineering Officers, Engineers, Masters and Ratings for basic operations on liquefied gas tankers 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).
- Those 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.

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.

- 1 Determine characteristics of tanker cargo and tankers to ensure safe transfer and transport of cargo**

PERFORMANCE CRITERIA

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

- 1.1** Features of various types of liquefied gas tankers are outlined
- 1.2** Cargo operations of tankers are identified
- 1.3** Properties of cargo being transported are identified and their impact on safety, the environment and vessel operations are outlined
- 1.4** Hazards associated with the transport of cargo are clarified according to emergency response documentation
- 1.5** Hazard controls associated with tanker cargo are employed according to organisational procedures
- 2 Comply with legislative and organisational requirements for safe transfer and transport of tanker cargo**
- 2.1** Safety data sheets (SDS)/material safety data sheets (MSDS) relevant to cargo are accessed and procedures for tanker safety and safety management are identified
- 2.2** SDS/MSDS are interpreted to identify relevant cargo-related hazards to the vessel and to personnel
- 2.3** Legislative and organisational requirements are interpreted to identify appropriate actions for safe transfer and transport of cargo

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| 3 Take precautions to prevent hazards | 3.1 Organisational policies and procedures to minimise hazards are identified |
| | 3.2 Type and severity of the hazard posed by cargo is recognised |
| | 3.3 Transfer and transport of cargo is monitored to prevent hazards |
| | 3.4 Gas monitoring equipment is regularly inspected and used according to organisational procedures |
| 4 Recognise hazardous situation | 4.1 Source of hazard is identified according to organisational procedures |
| | 4.2 Risk is assessed considering severity and likelihood of consequences |
| | 4.3 Control measures to minimise risk are implemented to level of responsibility or referred to appropriate person for further action |
| | 4.4 Containment procedures are applied where appropriate |
| | 4.5 Appropriate safety procedures are followed and personal protective equipment (PPE) is used according to organisational procedures |
| | 4.6 Risk is eliminated, where possible, and if not practical, actions are taken to control risk |
| 5 Take precautions to prevent pollution of the environment from release of liquefied gases | 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 MARA001 Contribute to safe cargo operations on liquefied gas tankers.

Links

Companion Volume implementation guide can be found in VetNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>

Assessment Requirements for MARAO12 Contribute to basic cargo operations on liquefied gas tankers

Modification History

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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:

- assisting in implementing shipboard spill containment procedures
- communicating clearly and effectively
- contributing to cargo operations in accordance with principles and procedures
- identifying hazards, assessing risks and applying control measures in accordance with safety management systems (SMS)
- measuring for gas using monitoring instruments
- reading and interpreting safety data sheets (SDS)/material safety data sheets (MSDS), relevant cargo-related hazards to vessel and to personnel, and taking appropriate action according to organisational procedures
- recognising problems and hazards that can arise when managing safety on a liquefied gas tanker in accordance with SMS
- reporting relevant information to the responsible person.

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:

- cargo handling equipment, including cargo compressors
- cargo types, characteristics and their properties
- chemical symbols
- effects of brittle fracture and prevention
- effects of pollution on human and marine life
- electrical safety
- emergency response procedures, including emergency organisation and alarms
- emergency shutdown (ESD) system
- fire hazards associated with cargo handling and transportation of liquefied gases in bulk
- firefighting agents and systems used to extinguish gas fires
- gas testing and monitoring instruments
- general arrangement and construction of liquefied gas tankers

- hazards and hazard control measures associated with tanker operations, including:
 - anti-static measures
 - atmospheric control
 - cargo inhibition
 - corrosion
 - cryogenic effects on the hull
 - electrical
 - electrostatic
 - enclosed space
 - environmental
 - explosion and flammability
 - extremely low temperatures
 - fire
 - gas testing
 - health hazards
 - hot and cold work
 - importance of cargo compatibility
 - inerting, drying and monitoring techniques
 - loss of containment
 - pollution
 - pressure
 - reactivity
 - repair and maintenance work
 - segregation
 - sources of ignition
 - toxicity
 - transport of cargo
 - vapour leaks and clouds
 - ventilation
- importance of cargo compatibility
- information on SDS/MSDS
- interpreting liquefied gas tanker layouts, tanker cargo features, characteristics and hazards
- loading, unloading and care in transit
- piping systems and valves
- precautions to be taken:
 - before and during repair and maintenance work
 - when entering enclosed spaces
- liquefied gas tanker cleaning, purging, gas-freeing and inerting
- liquefied gas tanker safety culture and safety management
- pressure and temperature, including vapour pressure/temperature relationship

- relevant firefighting operations and the use of firefighting installations
- reliquefaction systems and control of boil-off
- ship/shore safety checklist
- tank evacuation (rescue and escape) equipment
- types of electrostatic charge generation
- types of liquefied gas tankers
- using SDS/MSDS information when applying first aid
- using types of personal protective equipment (PPE), including:
 - breathing apparatus
 - resuscitators
- work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices.

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, including gas monitoring instruments and oxygen indicators.

Links

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