



Australian Government

MARC028 Operate deck machinery, cargo handling gear and equipment on a vessel

Release: 1

MARC028 Operate deck machinery, cargo handling gear and equipment on a vessel

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to operate deck machinery and cargo handling gear and equipment on a vessel.

This unit applies to individuals working as an Integrated Rating or Able Seafarer Deck on a range of vessels.

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

Pre-requisite Unit

Not applicable.

Competency Field

C – Equipment Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for operations

PERFORMANCE CRITERIA

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

- 1.1 Routine pre-operational checks of deck machinery or cargo handling gear and equipment are completed prior to use according to manufacturer specifications and organisational procedures
- 1.2 Properties of cargo being transported are identified and their impact on safety, the environment and vessel operations is established

- 1.3 Preparations for operations are made and lifting equipment is set up according to organisational procedures
 - 1.4 Tools and equipment appropriate to work requirements are selected, checked for safety and set up for operation
 - 1.5 Safety equipment appropriate to work requirements are made ready and confirmed to be in good condition
 - 1.6 Methods of communication are established and agreed to
 - 1.7 Equipment faults or malfunctions are identified and reported according to organisational procedures
 - 1.8 Work health and safety (WHS)/occupational health and safety (OHS) hazards in work area are identified, and risks are assessed and reported according to organisational procedures
- 2 Undertake deck machinery, cargo handling gear and equipment operations**
 - 2.1 Suitable personal protective equipment is selected and used according to organisational procedures
 - 2.2 Hazard control procedures are identified and applied to ensure safe operation of deck machinery and cargo handling equipment
 - 2.3 Deck machinery and cargo handling gear and equipment are operated in a safe and controlled manner
 - 2.4 Performance and efficiency of deck machinery and cargo handling gear and equipment operations is monitored
 - 2.5 Safe operational practices are used to anticipate and control hazards
 - 2.6 Adverse sea and weather conditions that impact on operation of deck machinery, and cargo handling gear and equipment are identified and operational practices are adjusted to maintain safety of vessel and personnel
 - 2.7 Measures to prevent pollution during normal and emergency situations are applied according to regulatory requirements and organisational procedures
 - 2.8 Spill containment procedures are correctly implemented according to regulatory requirements and organisational procedures
- 3 Complete operations**
 - 3.1 Shut-down procedures are conducted according to

- manufacturer instructions and organisational procedures
- 3.2 Malfunctions, faults, irregular performance or damage to deck machinery and cargo handling gear and equipment are reported according to organisational procedures
- 3.3 Deck machinery and cargo handling gear and equipment are maintained and secured according to organisational procedures
- 3.4 Operational records are completed according to organisational procedures

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.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

- Deck machinery and equipment includes one or more of the following:
- anchoring equipment
 - blocks and tackle
 - booms
 - cables and chains
 - cranes
 - derricks
 - fibre and wire ropes
 - freeing ports
 - hatches and hatch covers
 - hoists
 - internal ramps associated with bow and stern door loading arrangements
 - pipeline systems – bilge and ballast suctions and wells
 - side/bow/stern doors or elevators
 - valves and pumps
 - watertight doors
 - welding, brazing, cutting equipment
 - winches and capstans

- Cargo includes one or more of the following:
- windlasses
 - chemicals and oils
 - explosives
 - general cargo, break bulk, unitised or in containers
 - hazardous or dangerous goods
 - heavy lifts
 - liquids in portable containers
 - liquefied gas
 - livestock
 - mineral concentrates
 - refrigerated cargo
 - scrap, pig iron ingots, steel coils and sheets
 - solid bulk materials
 - timber
- Cargo handling gear and equipment includes one or more of the following:
- chain blocks
 - chains
 - eye bolts
 - fibre ropes
 - flexible steel wire rope (FSWR)
 - rigging screws
 - shackles
 - sheaves
 - turnbuckles
 - wire and synthetic slings
- Preparations include:
- cargo gear record book entries
 - checking safe working load of equipment
 - establishing communications
 - identifying hazards
 - identifying locations of load site and destination
 - planning lifting operations
 - pre-operational checks
 - safety devices
- Hazards include the following:
- electrostatic hazards
 - environmental hazards
 - explosion and flammability
 - extremely low temperatures
 - insufficient lighting
 - low temperatures
 - overhead obstructions
 - other personnel in area of operation
 - pressure hazards

Hazard control procedures include one or more of the following:

- reactivity and corrosion
- source of ignition
- toxicity
- vapour leaks and clouds
- weather conditions
- anti-static measures
- atmospheric control
- cargo inhibition
- checking compatibility
- confined space entry precautions
- correct use of safety data sheet (SDS)/material safety data sheet (MSDS) information
- ensuring operation is visible to operator at all times or a watchperson is utilised to ensure a lift is monitored at all times
- gas testing
- identifying hazards and assessing risks of the operation
- inerting, drying and monitoring techniques
- inspecting equipment and record books before commencing operations
- providing adequate lighting
- segregation of cargo
- ship/shore checklist
- ventilation
- wearing appropriate protective clothing

Unit Mapping Information

This unit replaces and is equivalent to MARC3006A Operate deck machinery, cargo handling gear and equipment on a vessel.

MARC3006A replaces and is equivalent to TDMMR3407B Operate deck machinery.

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 MARC028 Operate deck machinery, cargo handling gear and equipment on a vessel

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, performance criteria and range of conditions on at least one occasion and include:

- applying risk assessment and hazard control strategies
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices
- completing required records related to the operation of deck machinery and cargo handling gear and equipment
- communicating with other workplace personnel using effective:
 - hand signals
 - hand held radios
 - listening techniques
 - questioning to confirm understanding and appropriate worksite protocol
 - signage
 - written instructions
- exercising all safety, environmental and hazard control precautions and procedures during the operation of deck machinery, cargo handling gear and equipment on a vessel
- following work schedules laid down in organisational instructions and safety management systems
- operating anchoring equipment under various conditions such as anchoring, weighing anchor, securing for sea and in emergencies
- reading, interpreting and applying instructions on the operation of deck machinery and cargo handling gear and equipment
- recognising faulty equipment and taking appropriate action
- recognising routine hazards and problems while operating deck machinery and cargo handling gear and equipment
- recognising routine hazards that can arise on a chemical and oil and liquefied gas tanker
- selecting and using relevant tools and equipment
- setting up, shutting down and storing welding, brazing, cutting equipment
- using and handling deck and cargo handling gear and equipment
- using basic signals to operate equipment including winches, cranes, windlasses and hoists
- working safely and collaboratively with others
- working safely at heights, and correctly applying and using safety equipment.

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:

- basic signals for the operation of equipment including winches, cranes, windlasses and hoists
- boom/jib movements and the safe positioning of the operator for any lift
- characteristics and features of bulk ship, chemical and oil tanker and liquefied gas tanker layouts and cargo
- communication techniques and signals needed during the operation of deck machinery and cargo handling gear and equipment
- correct method of replacing winch wire and/or rope and attaching new wire and/or rope to winch drum
- faulty and damaged wire and/or rope
- fibre and wire ropes, cables and chains including their construction, use markings, maintenance and proper stowage
- function and uses of:
 - cranes, pumps, hoists, cranes, booms and related equipment
 - hatches, watertight doors, ports and related equipment
 - winches, windlasses, capstans and related equipment
- fundamental properties of liquid and liquefied cargo and their impact on safety, the environment and vessel operations
- hazards and control measures associated with bulk ship, chemical and oil tanker, liquefied gas tanker cargo operations
- hazards and related safety precautions relevant to basic welding, brazing and cutting
- piping systems, valves, loading and unloading, care in transit and emergency shut down procedures
- principal features and operating characteristics of steering gear and deck machinery used on a range of vessel types
- problems related to operating deck machinery and cargo handling gear and equipment, and appropriate actions and solutions
- procedures for:
 - checking and inspecting deck machinery and cargo handling gear and equipment used on vessels
 - safe operation of deck machinery and cargo handling gear and equipment
- records that must be maintained on a vessel relevant to cargo handling and stowage
- relevant sections of maritime regulations, codes and conventions related to tankers and gas carriers
- relevant WHS/OHS requirements, work practices and pollution control regulations and policies

- safe working loads of ropes, wires, blocks, chains and lifting gear
- safety data sheets (SDSs)/material safety data sheets (MSDSs)
- safety, environmental and hazard control precautions and procedures relevant to the operation of deck machinery and cargo handling gear and equipment
- terminology relating to the structure, capacities and operations of various types of tankers and gas carriers
- use and general maintenance of lifting equipment and basic slinging techniques.

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.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in 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.

Assessment of the operation of deck machinery and cargo handling gear and equipment must occur in workplace operational situations. Where this is not available, in simulated workplace operational situations that replicate workplace conditions.

Resources for assessment include access to:

- gas monitoring equipment including:
 - gas monitoring instruments
 - oxygen indicators
- relevant documentation including workplace procedures, regulations, codes of practice and operation manuals
- tools, materials, cargo handling equipment, piping systems and valves that replicate and are currently used in industry including:
 - basic hydraulic systems
 - cargo hatch covers
 - cranes and derricks
 - lifeboat davits
 - lifting equipment
 - mooring equipment
 - safeguards and protective devices for winches
 - small cranes, derricks and booms
 - gangways and pilot ladders
 - winches

- windlasses
- personal protective equipment currently used in industry including:
 - free fall arrest devices
 - safety harness
 - safety nets
 - static safety lines.

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