



Australian Government

MARC052 Operate deck machinery, cargo handling gear and equipment on a vessel

Release: 1

MARC052 Operate deck machinery, cargo handling gear and equipment on a vessel

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 operate deck machinery and cargo handling gear and equipment on a vessel.

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

- Able Seafarer - Deck
- Integrated Rating

on a range of vessels.

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 an Able Seafarer - Deck or Integrated Rating 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

C – Equipment Operations

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 Prepare for operations

- 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 workplace 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 workplace 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 workplace 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 workplace procedures

2 Undertake deck machinery, cargo handling gear and equipment operations

- 2.1** Suitable personal protective equipment (PPE) is selected and used according to workplace 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, 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 workplace procedures
 - 2.8 Spill containment procedures are correctly implemented according to regulatory requirements and workplace procedures
- 3 **Complete operations**
 - 3.1 Shutdown procedures are conducted according to manufacturer instructions and workplace procedures
 - 3.2 Malfunctions, faults, irregular performance or damage to deck machinery and cargo handling gear and equipment are reported according to workplace procedures
 - 3.3 Deck machinery and cargo handling gear and equipment are maintained and secured according to workplace procedures
 - 3.4 Operational records are completed according to workplace 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.

Unit Mapping Information

This unit replaces and is equivalent to MARC028 Operate deck machinery, cargo handling gear and equipment on a vessel.

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 MARC052 Operate deck machinery, cargo handling gear and equipment on a vessel

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:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices
- applying risk assessment and hazard control strategies
- communicating with other workplace personnel using effective:
 - handheld radios
 - hand signals
 - listening techniques
 - questioning to confirm understanding and appropriate worksite protocol
 - signage
 - written instructions
- completing required records related to the operation of deck machinery and cargo handling gear and equipment
- exercising 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 in accordance with workplace instructions and safety management system (SMS)
- 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 cargo handling gear hazards and problems while operating deck machinery and cargo handling gear and equipment
- recognising faulty equipment and taking appropriate actions
- 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 and cutting equipment
- using and handling deck and cargo handling gear and equipment
- using signals to direct the operation of 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 and performance criteria and include knowledge of:

- access arrangements, including:
 - freight elevators
 - hatch covers
 - hatches
 - ramps
 - side, bow and stern doors
- appropriate selection and use of personal protective equipment (PPE)
- boom/jib movements and the safe positioning of the operator for any lift
- cargo, including:
 - chemicals and oils
 - explosives
 - general cargo, break bulk, unitised or in containerised
 - hazardous or dangerous goods, both break bulk and containerised
 - heavy lifts
 - liquefied gas
 - liquids in portable containers
 - livestock
 - mineral concentrates
 - refrigerated cargo
 - scrap, pig iron ingots, steel coils and sheets
 - solid bulk materials
 - timber
- cargo handling gear and equipment
- characteristics and features of bulk carriers, chemical and oil tankers and liquefied gas tanker layouts and cargo
- function and uses of:
 - cranes, pumps, hoists, booms, derricks and related equipment
 - hatches, watertight doors, port hole, port cover 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 carriers, chemical and oil tankers, and liquefied gas tanker cargo operations, including:
 - electrostatic hazards
 - environmental hazards

- explosion and flammability
- extremely low temperatures
- insufficient lighting
- low temperatures
- other personnel in area of operation
- overhead obstructions
- pressure hazards
- reactivity and corrosion
- source of ignition
- toxicity
- vapour leaks and clouds
- weather conditions
- hazard and risk control procedures, including:
 - anti-static measures
 - atmospheric control
 - cargo inhibition
 - checking compatibility
 - confined space entry precautions
 - correct use of safety data sheets (SDS)/material safety data sheets (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 PPE
- hazards and related safety precautions relevant to basic welding, brazing and cutting
- hoisting and dipping of flags and main single-flag signals
- hydraulic and pneumatically operated mechanical tools and equipment
- identifying faulty and damaged wire and/or rope
- identifying fibre and wire ropes, cables and chains, including their construction, use, markings, maintenance and proper stowage
- pipeline systems – bilge and ballast suctions and wells
- piping systems, valves, loading and unloading, care in transit and emergency shutdown (ESD) 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
 - marlin spike seamanship, including proper use of knots, splices and stoppers
 - rigging and unrigging pilot ladders, hoists, rat-guards and gangways
 - 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, environmental and hazard control precautions and procedures relevant to the operation of deck machinery and cargo handling gear and equipment
- signals for the operation of equipment, including winches, cranes, windlasses and hoists
- standard communication techniques and signals used during 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
- the correct method of replacing winch wire and/or rope and attaching new wire and/or rope to winch drum
- use and general maintenance of lifting equipment and basic slinging techniques.

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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