



Australian Government

MARL037 Demonstrate knowledge of ships and ship routines

Release: 1

MARL037 Demonstrate knowledge of ships and ship routines

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to maintain a safe engineering watch on a commercial vessel.

This unit applies to people working in the maritime industry as a Marine Engineering Watchkeeper on commercial vessels greater than 750 kW.

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

Pre-requisite Unit

Not applicable.

Competency Field

L - Marine Engineering

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1 Outline key features of different types of commercial ships	1.1	Annotated sketch of profile and midship section of a range of ship types is constructed
	1.2	Terms used to quote size of a ship are used appropriately
	1.3	Plate materials and joining methods used in ship construction are detailed
	1.4	Basic principles of watertight integrity are identified and applied
	1.5	Shipping terms are applied to describe characteristics of commercial vessels

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| 2 Explain dangers associated with entry into engine room spaces | 2.1 | How atmosphere in engine room spaces may be hazardous is detailed |
| | 2.2 | Procedures for obtaining permission to enter engine room spaces are outlined |
| | 2.3 | Administrative procedures applying to work in engine room after normal hours are outlined |
| 3 Explain need for standards and other monitoring requirements for ships | 3.1 | International standards relating to construction, equipment and conditions of commercial vessels are outlined |
| | 3.2 | National legislation and International Maritime Organization (IMO) conventions concerning safety of life at sea, security and protection of marine environment are outlined |
| | 3.3 | Requirements of International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM) Code and safety management system are outlined |
| | 3.4 | Qualifications and experience requirements for key personnel on a ship are outlined |
| | 3.5 | Personal and ship certificates, and other documents required to be carried on board ship by international conventions, how they are obtained, how they may be verified and period of their legal validity are identified |
| | 3.6 | Roles and functions of key national and international shipping authorities and organisations are outlined |
| | 3.7 | Purpose of surveys and dry-docking of ships are explained |
| 4 Explain responsibilities of personnel on board ship | 4.1 | Roles and responsibilities of personnel on board ship are clarified |
| | 4.2 | Organisational structure, lines of responsibility and communication on board ship are outlined |
| | 4.3 | International maritime conventions, recommendations and national legislation concerning shipboard personnel and training are clarified |
| | 4.4 | Daily work and shipboard routines relating to engineering watchkeeping are outlined |
| | 4.5 | Personal and social responsibilities of personnel on board ship are confirmed |

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| 5 Explain engineering watchkeeping procedures | <div>5.1 Established marine engineering practice and regulatory requirements for conduct, handover and relief of an engineering watch are outlined</div> <div>5.2 Operational procedures and requirements for main propulsion, auxiliary systems and associated controls are outlined</div> <div>5.3 Operational procedures and requirements for monitoring the performance of main propulsion, auxiliary systems and associated controls are outlined</div> <div>5.4 Procedures for identifying, rectifying and reporting problems associated with performance of main propulsion, auxiliary systems and associated controls are outlined</div> <div>5.5 Basic operation, monitoring and maintenance of shafting installations and propeller systems is detailed</div> <div>5.6 Engine room resource management principles and procedures required for a safe engineering watch are outlined</div> <div>5.7 Safety precautions to be observed during a watch and immediate action to be taken in a fire or incident are clarified</div> <div>5.8 Requirements for recording activities and incidents that occur during keeping an engineering watch are detailed</div> <div>5.9 Fatigue management strategies for engine room management team are identified</div> <div>5.10 Personal task and workload management techniques appropriate for an engineering watchkeeper are outlined</div> |
| 6 Outline procedures and responses to malfunctions and emergency situations | <div>6.1 Potential malfunctions and emergencies relating to main propulsion and auxiliary systems are identified</div> <div>6.2 Correct response and required action relating to potential malfunctions and emergencies in main propulsion and auxiliary systems are detailed</div> <div>6.3 Regulatory requirements and reporting requirements for incidents and emergency situations outside watchkeeper limits of responsibility are confirmed</div> |
| 7 Recognise tanker types and cargo characteristic | <div>7.1 Principal features and layout of various types of tankers and gas carriers are identified and differences between them determined</div> |

- 7.2 Terminology relating to the structure, capacities and operations of tankers is correctly used when describing the features of various types of tankers and gas carriers and their differences
- 7.3 Principal features and distinguishing characteristics of various types of tanker cargoes are correctly identified and applied during watchkeeping duties on a tanker or gas carrier

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.

Ship types include one or more of the following:

- bulk carrier
- container
- general dry cargo
- passenger
- ro-ro
- tanker

Shipping terms include one or more of the following:

- hogging
- panting
- pounding
- racking
- sagging

Key personnel include one or more of the following:

- crew
- master
- officers

Shipping organisations and authorities include one or more of the following:

- Australian Maritime Safety Authority (AMSA)
- classification societies
- IMO
- National Maritime Safety Committee
- state and territory marine authorities

Personal and social responsibilities include one or more of the following:

- alcohol and drug abuse
- discipline
- finance
- health and fitness
- hygiene
- relationships
- safety

Engine room resource management principles include one or more of the following:

- allocation, assignment and prioritisation of resources
- assertiveness and leadership
- considering team experience
- effective communication
- obtaining and maintaining situational awareness

Personal task and workload management techniques include one or more of the following:

- coordination
- managing resource constraints
- managing time constraints
- personnel assignment
- planning

Potential malfunctions and emergencies include one or more of the following:

- accidents
- breakdowns
- collisions
- explosion fire
- flooding
- groundings

Unit Mapping Information

No equivalent unit.

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 MARL037 Demonstrate knowledge of ships and ship routines

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

- accessing information required to undertake watchkeeping duties in routine and emergency situations
- applying effective decision-making techniques
- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- developing, implementing and overseeing standard operating procedures
- identifying and determining appropriate ways of responding to malfunctions and emergency situations in daily watchkeeping operations
- identifying methods and procedures needed to implement watchkeeping duties on commercial vessels
- identifying, interpreting and processing numerical and graphical information required to undertake watchkeeping duties in routine and emergency situations
- reading and interpreting written instructions, procedures and information relevant to watchkeeping duties

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:

- bridge instrumentation, controls and alarms
- bridge resource management systems
- causes of groundings, collisions and casualties
- composition of bridge/engine room management team
- enclosed spaces
- engineering watchkeeping procedures and practices
- fatigue management principles and techniques
- functions of unmanned machinery space (UMS) controls, alarms and indicators
- general layout of tankers
- hierarchy and organisational structure of shipboard personnel
- key international and Australian Standards relating to shipping
- key shipping authorities and organisations
- maritime communication techniques
- navigational hazards and implications for watchkeeping
- personal and social responsibilities onboard ship
- procedures for dealing with malfunctions and emergencies
- relevant sections of maritime regulations, codes and conventions related to the watchkeeper responsibilities on tankers and gas carriers
- rudder and propeller control and vessel manoeuvring characteristics
- sections of International Maritime Organization (IMO), Standards of Training Certification and Watchkeeping (STCW), Convention and Codes and Australian Maritime Safety Authority (AMSA) Marine Orders dealing with watchkeeping principles, arrangements, procedures, roles and responsibilities
- signs of fatigue
- terminology relating to the structure, capacities and operations of various types of tankers and gas carriers
- types of ships and key features of ships
- watch handover procedures
- WHS/OHS legislation and policies.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must satisfy the National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) standards.

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 must occur in workplace operational situations or where these are not available, in simulated workplace operational situations or an industry-approved marine operations site that replicates workplace conditions.

Resources for assessment must include access to:

- relevant documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- technical reference library with current publications on commercial shipping
- tools, equipment, machinery, materials and personal protective equipment currently used in industry.

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

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