



Australian Government

MARL060 Demonstrate knowledge of ships and ship routines

Release: 1

MARL060 Demonstrate knowledge of ships and ship routines

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 maintain a safe engineering watch on a commercial vessel.

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

- Electro-Technical Officer (STCW Electro-Technical Officer Unlimited)
- Engineer Class 3 Near Coastal
- Engineer Watchkeeper (STCW Engineer Watchkeeper Unlimited).

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit.

- 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.

Near Coastal Qualifications:

- This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as an Engineer Class 3 Near Coastal as defined in the Marine Order 505 (Certificates of competency - National Law) 2013.

Blue Waters Qualifications:

- This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as an Electro-Technical Officer (STCW Electro-Technical Officer Unlimited) or Engineer Watchkeeper (STCW Engineer Watchkeeper Unlimited) 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).

Pre-requisite Unit

Not applicable.

Competency Field

L - Engineering

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Outline key features of different types of commercial ships

PERFORMANCE CRITERIA

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

- 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

2 Explain need for standards and other monitoring requirements for ships

- 2.1** International standards relating to construction, equipment and conditions of commercial vessels are outlined
- 2.2** National legislation and IMO conventions concerning safety of life at sea, security and protection of marine environment are outlined
- 2.3** Requirements of International Safety Management (ISM) Code for the Safe Operation of Ships and for Pollution Prevention and safety management system (SMS) are outlined
- 2.4** Qualifications and experience requirements for key personnel on a ship are outlined

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| | 2.5 | Personal and ship certificates, and other documents required to be carried onboard ship by international conventions, how they are obtained, how they may be verified, and period of their legal validity are identified |
| | 2.6 | Roles and functions of key national and international shipping authorities and organisations are outlined |
| | 2.7 | Purpose of surveys and dry-docking of ships are explained |
| 3 | Explain responsibilities of personnel onboard ship | |
| | 3.1 | Roles and responsibilities of personnel onboard ship are clarified |
| | 3.2 | Organisational structure, lines of responsibility and communication onboard ship are outlined |
| | 3.3 | International maritime conventions, recommendations and national legislation concerning shipboard personnel and training are clarified |
| | 3.4 | Daily work and shipboard routines relating to engineering watchkeeping are outlined |
| | 3.5 | Personal and social responsibilities of personnel onboard ship are confirmed |
| 4 | Explain engineering watchkeeping procedures | |
| | 4.1 | Established engineering practice and regulatory requirements for conduct, handover and relief of an engineering watch are outlined |
| | 4.2 | Operational procedures and requirements for main propulsion, auxiliary systems and associated controls are outlined |
| | 4.3 | Operational procedures and requirements for monitoring the performance of main propulsion, auxiliary systems and associated controls are outlined |
| | 4.4 | Procedures for identifying, rectifying and reporting problems associated with performance of main propulsion, auxiliary systems and associated controls are outlined |
| | 4.5 | Basic operation, monitoring and maintenance of shafting installations and propeller systems is detailed |
| | 4.6 | Engine room resource management principles and |

- procedures required for a safe engineering watch are outlined
- 4.7** Safety precautions to be observed during a watch and immediate actions to be taken in a fire or incident are clarified
- 4.8** Requirements for recording activities and incidents that occur during keeping an engineering watch are detailed
- 4.9** Fatigue management strategies for engine room management team are identified
- 4.10** Personal tasks and workload management techniques appropriate for an Engineer Watchkeeper are outlined
- 5. Communicate between bridge, engine control room and main engine room**
- 5.1** Available tools are correctly used to communicate between bridge, engine control room and main engine room
- 5.2** Appropriate records of engineering communications are completed according to organisational procedures and regulatory requirements
- 6. Communicate with officers, crew and others**
- 6.1** Clear and precise communication is used, and established communication practices are followed
- 6.2** Communication misunderstandings are avoided using appropriate confirmation techniques and established communication practices
- 6.3** Messages concerning vessel safety and operations are received, read, clarified as required, correctly interpreted and applied to engineering activities
- 6.4** Appropriate techniques are used when communicating with multilingual crew to ensure communication is effective and messages are clearly understood
- 6.5** Non-verbal communication is appropriately used when working and communicating with others
- 7 Outline procedures and responses to malfunctions and emergency situations**
- 7.1** Potential malfunctions and emergencies relating to main propulsion and auxiliary systems are identified
- 7.2** Correct response and required action relating to potential malfunctions and emergencies in main

		propulsion and auxiliary systems are detailed
	7.3	Regulatory requirements and reporting requirements for incidents and emergency situations outside Watchkeeper limits of responsibility are confirmed
8	Recognise tanker types and cargo characteristic	8.1 Principal features and layout of various types of tankers and gas carriers are identified and differences between them determined 8.2 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 8.3 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.

Unit Mapping Information

This unit replaces and is equivalent to MARL037 Demonstrate knowledge of ships and ship routines.

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 MARL060 Demonstrate knowledge of ships and ship routines

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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:

- accessing information required to undertake watchkeeping duties in routine and emergency situations
- applying effective decision-making techniques
- applying relevant work health and safety (WHS)/occupational health and safety (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 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
- engine room resource management principles, including:
 - allocation, assignment and prioritisation of resources
 - assertiveness and leadership
 - considering team experience

- effective communication
- obtaining and maintaining situational awareness
- engineering watchkeeping procedures and practices
- fatigue management principles and techniques
- functions of unmanned machinery space (UMS) controls, alarms and indicators
- general layout of tankers, including:
 - use of manufacturer's manuals
 - use of shipboard drawings
- hierarchy and organisational structure of shipboard personnel, including:
 - crew
 - Master
 - officers
- key international and Australian Standards relating to shipping
- key shipping authorities and organisations, including:
 - Australian Maritime Safety Authority (AMSA)
 - classification societies
 - International Maritime Organization (IMO)
 - National Maritime Safety Committee
 - state and territory marine authorities
- maritime communication techniques, including:
 - use of maritime terminology and technical terminology
- navigational hazards and implications for watchkeeping
- personal and social responsibilities onboard ship, including:
 - alcohol and drug abuse
 - discipline
 - finance
 - health and fitness
 - hygiene
 - relationships
 - safety
- personal task and workload management, including:
 - coordination
 - managing resource constraints
 - managing time constraints
 - personnel assignment
 - planning
- procedures for dealing with malfunctions and emergencies, including:
 - accidents
 - breakdowns
 - collisions

- explosion fire
- flooding
- groundings
- 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 IMO, International Convention on Standards of Training Certification and Watchkeeping for Seafarers (STCW) conventions and codes and AMSA Marine Orders dealing with watchkeeping principles, arrangements, procedures, roles and responsibilities
- shipping terms, including:
 - hogging
 - panting
 - pounding
 - racking
 - sagging
- ship types, including:
 - bulk carrier
 - container
 - general dry cargo
 - passenger
 - roll-on and roll-off (ro-ro)
 - tanker
- 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 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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