



Australian Government

Department of Education, Employment and Workplace Relations

TDMMC607B MANAGE A PROPULSION UNIT USING THE APPROPRIATE ENGINE SYSTEMS AND SUPPORT SERVICES

Release: 1

TDMMC607B MANAGE A PROPULSION UNIT USING THE APPROPRIATE ENGINE SYSTEMS AND SUPPORT SERVICES

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to operate a propulsion unit, ancillary power units and equipment on board a commercial vessel within limits of responsibility of a Master 4/Skipper 2 in accordance with technical specifications and within safe operating limits

Application of the Unit

Application of the unit	The unit has applications in qualifications for a Master 4 and Skipper 2 operating a vessel of less than 80 metres in length within inshore limits (15 nm) and less than 35 metres within ACMW (600 nm), i.e. Certificate IV in Transport&Distribution (Coastal Maritime Operations - Master Class 4).
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant maritime regulations describing mandatory requirements for a Master 4/Skipper 2. This includes applicable sections of State/Territory maritime licensing and regulatory requirements and the National Standard for Commercial Vessels (NSCV) and the USL Code.
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Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.</i>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
. 1 Operate propulsion unit and ancillary power units and equipment	. a Controls of propulsion unit, ancillary power units and equipment are operated in accordance with manufacturer's instructions b Machinery is operated within accepted safety parameters and limits of capacity at all times during a voyage c Performance of propulsion unit and ancillary units and equipment is monitored and evaluated d Safety and hazard minimisation procedures and regulations related to the control propulsion unit, ancillary power units and equipment are followed to maintain the safety of personnel, propulsion and engineering systems, cargo or fish and the vessel
2 Monitor performance of propulsion unit	a Appropriate corrective action is taken when performance of propulsion unit or ancillary power units and equipment is found to be unsatisfactory or outside of specified limits b The relationship between speed and fuel consumption is monitored and action taken as required in accordance with operational instructions

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ELEMENT	PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
3 Maintain records	a Correct records are kept relating to the operation and maintenance of propulsion unit or ancillary power units and equipment and any related safety incidents that occur during a voyage

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Relevant sections of State and Territory maritime regulations, NSCV and USL Code
- 2 Relevant OH&S legislation and policies
- 3 Methods for controlling and managing the operation of shipboard propulsion units, ancillary power units and equipment
- 4 Characteristics of propulsion units, ancillary power units and equipment for vessels up to 80 m in length, including operational limits, vessel stopping distances and turning circles at various draughts, speeds and loading
- 5 Relationship between a vessel's speed and fuel consumption, including the meaning of economical RPM and its application
- 6 Procedures for the monitoring and evaluation of the performance of propulsion unit, ancillary power units and equipment
- 7 Dangers associated with the operation of shipboard ancillary power units and related hazard prevention strategies
- 8 Sequence of required action when power unit becomes overloaded
- 9 Principles of operation and control of various shipboard emergency systems
- 10 Requirements for waste management and control systems under the MARPOL Convention

REQUIRED KNOWLEDGE

- 11 Maritime communication techniques
- 12 Problems with the remote control of propulsion unit, ancillary power units and equipment on vessels of up to 80 m in length and appropriate preventative and remedial action and solutions

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Communicate effectively with other personnel when managing a propulsion unit on a vessel of less than 80 m
- 2 Read and interpret manufacturer's instructions for the operation the propulsion systems and auxiliary systems on a vessel of less than 80 m
- 3 Read and interpret maritime regulations, rules and instructions on the operation of vessels of less than 80 m
- 4 Maintain records of the operation and maintenance of propulsion unit and ancillary power units and equipment and any related safety incidents
- 5 Keep records of the monitoring and operation of safety and fire detection/suppression equipment and any required remedial action
- 6 Work collaboratively with other shipboard personnel and passengers during vessel operations
- 7 Recognise when the performance of propulsion unit or ancillary power units and equipment is unsatisfactory or outside of specified limits and take appropriate action
- 8 Recognise problems that may occur with the remote control of propulsion unit, ancillary power units and equipment on vessels of less than 80 metres in length and take appropriate preventative and remedial action
- 9 Carry out necessary calculations required when managing a propulsion unit on a vessel of less than 80 m
- 10 Adapt to differing types of vessels, propulsion systems and auxiliary systems when managing propulsion unit and auxiliary systems on a vessel of less than

REQUIRED SKILLS

80 m

- 11 Monitor and evaluate the performance of propulsion unit, ancillary power units and equipment on a vessel of less than 80 m

Evidence Guide

Evidence Guide

TDMMC607B MANAGE A PROPULSION UNIT USING THE APPROPRIATE ENGINE SYSTEMS AND SUPPORT SERVICES

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

1 Critical aspects of evidence required to demonstrate competency in this unit	Assessment must confirm appropriate knowledge and skills to: - a Operate propulsion unit, ancillary power units and equipment - b Monitor and evaluate the performance of vessel's propulsion unit, ancillary power units and equipment - c Exercise required safety and hazard control procedures when operating the propulsion unit, ancillary power units and equipment of the vessel - d Monitor and check the operation of safety and fire detection/suppression equipment - e Identify typical problems when controlling shipboard propulsion unit, ancillary power units and equipment, and take appropriate action - f Communicate effectively with others when controlling propulsion unit, ancillary power units and equipment
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2 Evidence required for demonstration of consistent performance

- a Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- b Consistently applies underpinning knowledge and skills when:
 - 1 carrying out propulsion and engineering control operations
 - 2 identifying and evaluating problems with propulsion unit, ancillary power units and equipment and determining appropriate courses of action
 - 3 applying safety precautions relevant to operation of propulsion unit, ancillary power units and equipment
 - 4 assessing operational capability and performance of propulsion unit, ancillary power units and equipment
- c Shows evidence of application of relevant workplace procedures, including:
 - 1 relevant maritime regulations
 - 2 OH&S regulations and hazard prevention policies and procedures
 - 3 job procedures and work instructions
 - 4 relevant manufacturer's guidelines, including instructions on equipment performance, capability and limitations
 - 5 following on-board housekeeping processes

Evidence Guide (continued)

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2 Evidence required for demonstration of consistent performance (continued)

- 6 waste, pollution and recycling management processes and systems
- d Action is taken promptly to report accidents and incidents
- e Work is completed systematically with required attention to detail

	f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions among crew and others
3 Context of assessment	a Assessment of competency must comply with the assessment requirements of the relevant maritime regulations b Assessment of this unit must be undertaken within relevant marine authority approved and audited arrangements by a registered training organisation: 1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations, and 2 Appropriate practical assessment must occur: - i at the registered training organisation; and/or - ii on an appropriate working or training vessel
4 Specific resources required for assessment	Access is required to opportunities to: a participate in a range of exercises, case studies and other simulated practical and knowledge assessments that demonstrate the skills and knowledge to operate and monitor the performance of the propulsion unit, ancillary power units and equipment of a typical vessel up to 80 metres in length over a range of representative operational situations; and/or b operate a suitable integrated vessel simulator over an appropriate range of simulated propulsion management situations; and/or c manage the propulsion unit, ancillary power units and equipment on a vessel up to 80 metres in length on a coastal voyage

Range Statement

Range Statement

TDMMC607B MANAGE A PROPULSION UNIT USING THE APPROPRIATE ENGINE SYSTEMS AND SUPPORT SERVICES

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

VARIABLE	SCOPE
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1. GENERAL CONTEXT

a. Work must be carried out:	1 in compliance with the relevant maritime regulations
b. Work is performed:	1 performed within a defined range of operations and routine procedures, with responsibility for own outputs and some responsibility for others in achieving the specified quality and quantity of outcomes
c. Work involves:	1 the routine operation of the propulsion unit, ancillary power units and equipment on a vessel up to 80 metres in length on a coastal voyage
d. Work requires:	1 some discretion and judgement in anticipating and allowing for possible operational problems, safety hazards and contingencies

2. WORKSITE ENVIRONMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

a Vessel may include:	1 any commercial vessel less than 80 m in length engaged in coastal voyages
b Operation of the propulsion unit, ancillary power units and equipment may be carried out	1 by day or night in both normal and emergency situations 2 under normal and adverse conditions of weather and loading 3 while underway 4 during berthing and unberthing operations 5 while anchoring or mooring

Range Statement (continued)

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VARIABLE	SCOPE
c Propulsion unit, ancillary power units and equipment that may be operated or monitored include:	1 engine systems and controls 2 power units and controls 3 unit and equipment performance indicators 4 indicators of speed and fuel consumption 5 steering gear 6 hydraulic systems and controls 7 pumps and pumping systems 8 bow thruster units 9 ancillary systems and controls

VARIABLE	SCOPE
d Propulsion units may include:	1 shafting, including CPP 2 direct drive shaft 3 diesel engines 4 gearing system 5 power generating units
e Ancillary power units and equipment may include:	1 cooling water systems 2 fuel pumps, lines and tanks 3 air starting systems 4 lubrication systems 5 water pumping systems 6 bilge systems 7 waste management and pollution control systems 8 steering gear systems 9 refrigeration systems 10 air-conditioning systems 11 fire detection and suppression systems

Range Statement (continued)

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VARIABLE	SCOPE
f Emergencies may include:	1 loss of propulsion 2 loss of electrical power

VARIABLE	SCOPE
	3 loss of steering 4 flooding 5 fire or explosion
g Documentation and records may include:	1 operational orders 2 relevant sections of State and Territory maritime regulations, NSCV and USL Code related to the operation of propulsion plants and ancillary equipment on a vessel up to 80 m in length on a coastal voyage 3 plant and equipment manufacturer's instructions and recommended procedures 4 instructions of relevant maritime authorities
h Applicable legislation, regulations and codes may include:	1 relevant sections of State and Territory maritime regulations, NSCV and USL Code 2 relevant Commonwealth, State and Territory OH&S legislation 3 MARPOL Convention on waste management and control systems

Unit Sector(s)

Not applicable.

Field

Field MC Manoeuvring Vessel

Relationship to other units

Relationship to other units	The unit may be assessed in conjunction with other units that relate to the functions of the occupation(s) concerned.
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