



Australian Government

Department of Education, Employment and Workplace Relations

**TDMMR2807B OPERATE AND
MAINTAIN AUXILIARY SYSTEMS ON
VESSELS WITHIN THE LIMITS OF
RESPONSIBILITY OF A MARINE
ENGINE DRIVER GRADE 2**

Release: 1



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Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to operate and carry out basic routine servicing within the limits of responsibility and skill of a Marine Engine Driver Grade 2 on auxiliary systems on a small commercial vessel up to 750 kW propulsion power, including the steering gears; lubricating oil and cooling water systems; pumps, bilge and sea water systems; and fuel and fuel oil systems on the vessel.

Note: Relevant State/Territory training and qualification requirements need to be fulfilled by any persons carrying out installation, maintenance and/or repair of refrigeration equipment especially with regard to preventing the escape of refrigerants into the atmosphere and to electrical work. Work on refrigeration systems only includes allowable basic operator servicing as per manufacturer's manual.

Maintenance and repair of refrigeration systems on a vessel should only be performed by persons qualified under the relevant regulations.

Application of the Unit

Application of the unit	The unit has application in the qualification for a Marine Engine Driver Grade 2 (MED 2) as per relevant sections of Part D of the National Standard for Commercial Vessels (NSCV), i.e. Certificate III in Transport&Distribution (Marine Engine Driving - Grade 2).
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant sections of State and Territory maritime regulations and NSCV/USL Code for a MED 2.
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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 auxiliary systems	- a Auxiliary systems are operated as per instructions and specifications - b Auxiliary systems are prepared, started and shut down in accordance with manufacturer's instructions - c Records of performance are maintained on running sheets and operations logs in accordance with procedures
2 Carry out basic, routine checking and servicing of auxiliary	- a The performance of auxiliary systems is routinely monitored in accordance with manufacturer's instructions - b Poor performance and faults are identified and appropriate action initiated to report or rectify the problem as per

ELEMENT	PERFORMANCE CRITERIA
systems	standard operating procedures

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ELEMENT	PERFORMANCE CRITERIA
2 Carry out basic, routine checking and servicing of auxiliary systems (continued)	- c Basic routine service checks and procedures are followed to maintain the serviceability of auxiliary systems in accordance with manufacturer's instructions - d Servicing records are completed as per instructions and procedures
3 Follow safety and hazard control procedures	- a Safety, hazard minimisation and pollution control procedures and regulations are followed at all times when operating auxiliary systems and carrying out basic servicing - b Operational and servicing hazards are identified and action is taken to minimise or eliminate risk to personnel, vessel and the environment - c Where relevant, procedures and precautions necessary for entry into confined spaces on a vessel are correctly followed - d Action is taken in the event of failure or emergency to isolate and secure the engine and propulsion systems and maintain the safety of the vessel and persons involved - e Vessel's emergency and contingency plans are followed in the event of a failure or emergency involving an auxiliary system

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Relevant OH&S and pollution control legislation and codes of practice
- 2 Procedures for the operation and routine servicing of auxiliary systems on a small vessel
- 3 Safety, environmental and hazard control precautions and procedures relevant to the operation and routine servicing of auxiliary systems on a small vessel
- 4 Typical problems related to the during the operation and servicing of auxiliary systems on small vessels and appropriate action and solutions
- 5 Principal features and operating characteristics of typical steering systems and steering system components used on small vessels, including:
 - a rudder construction
 - b rudder types
 - c rudder and stock support bearings
 - d glands, packing and seals
 - e tiller arm attachment
 - f steering operation using hydraulic, cable, and rod and gear
 - g requirements for the servicing and testing of steering and related hydraulic systems
- 6 Principal features and operating characteristics of typical pumping systems and pumping system components used on small vessels, including:
 - a fire, bilge, and tank circulating systems
 - b basic fault identification and servicing procedures

REQUIRED KNOWLEDGE

- c procedures for the prevention of corrosion in pumping systems
 - d valve types, including their construction and maintenance
 - e back flooding prevention procedures
 - f strainers, mudboxes and footvalves
 - g use of flexible materials, hoses, etc.
 - h drive systems, belts, clutches, motors, etc.
- 7 Principal features and operating characteristics of typical fuel and fuel oil systems used on small vessels, including:
- a basic principles of operation of fuel and fuel oil systems
 - b hazards when working with fuel and fuel oil systems
 - c environmental issues and responsibilities concerning operation and servicing of fuel and fuel oil systems

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- 8 Principal features and operating characteristics of typical refrigeration system used on small vessels, including:
- a basic principles of operation
 - b operating functions of component parts
 - c start up and shut down procedures
 - d system pump down procedures
 - e procedures for starting a system that has not pumped down correctly
 - f plant malfunctions and action that can be taken
 - g dangers of refrigerant gases and related legislation
 - h procedures for adding lubricating oil to a refrigeration compressor

- 8 Principal features and operating characteristics of typical refrigeration system used on small vessels, including:
- 9 Maritime communication techniques needed during the operation and servicing of auxiliary systems on small vessels
- 10 Servicing records that are maintained on a small commercial vessel

REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Use verbal communication skills required when operating and servicing auxiliary systems and equipment
- 2 Read, interpret and apply operating and service manuals and instructions for auxiliary systems and equipment, including all required OH&S procedures and precautions
- 3 Read and interpret material safety data sheets
- 4 Read and interpret performance readings and indications
- 5 Complete any required operational and servicing records
- 6 Work safely and collaboratively with others when operating and servicing auxiliary systems and equipment
- 7 Select and use relevant tools and equipment as per instructions
- 8 Recognise faulty equipment and take appropriate action as per operating instructions
- 9 Recognise routine problems when operating and servicing auxiliary systems and equipment and take appropriate action
- 10 Adapt to differences in vessels, auxiliary systems and equipment and operating and servicing procedures
- 11 Operate marine auxiliary systems and equipment on vessels of less than 750 kW propulsion power

Evidence Guide

Evidence Guide

TDMMR2807B OPERATE AND MAINTAIN AUXILIARY SYSTEMS ON VESSELS WITHIN THE LIMITS OF RESPONSIBILITY OF A MARINE ENGINE DRIVER GRADE 2

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 auxiliary systems on a small vessel - b Carry out servicing and basic repairs of auxiliary systems on a small vessel - c Identify typical problems related to the servicing of auxiliary systems on a small vessel and take appropriate action - d Exercise all required safety, environmental and hazard control precautions and procedures during operation and routine servicing of auxiliary systems - e Communicate effectively with others when operating and carrying out basic servicing on auxiliary systems on a small vessel
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 operating auxiliary systems on a small commercial vessel 2 carrying out routine servicing of auxiliary systems on a small vessel 3 identifying and evaluating routine operational and basic servicing problems and determining appropriate courses of action 4 applying safety and pollution control precautions - c Shows evidence of application of relevant workplace procedures, including:

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.

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| | <ol style="list-style-type: none"> 1 relevant sections of State and Territory marine regulations, NSCV and USL Code 2 OH&S regulations and hazard prevention policies and procedures 3 job procedures and work instructions 4 manufacturer's guidelines relating to operating and routine servicing of auxiliary systems on a small vessel 5 environmental protection procedures when carrying out servicing operations |
| d | Action is taken promptly to report and/or rectify issues and problems identified with operating and servicing auxiliary systems |
| 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 |

Evidence Guide (continued)

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3 Context of assessment

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|---|---|--|
| | 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: |

3 Context of assessment	- a Assessment of competency must comply with the assessment requirements of the relevant maritime regulations - 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 service auxiliary systems on small vessels falling within the limits of responsibility of Marine Engine Driver Grade 2; and/or - b operate and carry out routine servicing on auxiliary systems on an operational small commercial or training vessel within the limits of responsibility of a Marine Engine Driver Grade 2

Range Statement

Range Statement

TDMMR2807B OPERATE AND MAINTAIN AUXILIARY SYSTEMS ON VESSELS WITHIN THE LIMITS OF RESPONSIBILITY OF A MARINE ENGINE DRIVER GRADE 2

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

1. GENERAL CONTEXT

a. Work must be carried out:	1 in compliance with the relevant sections of the Australian Uniform Shipping Laws (USL) Code applicable to small commercial vessels
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The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

b. Work is performed:	1 within operational requirements, with responsibility for own outputs in relation to specified quality standards and limited responsibility for others in achieving the specified quality and quantity of outcomes
c. Work involves:	1 the operation and routine servicing of the auxiliary systems on a small vessel and the application of solutions to a defined range of servicing problems

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any small commercial vessel up to 750 kW propulsion power
b Operation and servicing of auxiliary systems may be conducted:	1 by day or night in both normal and emergency situations 2 under any permissible conditions of weather 3 while underway 4 during berthing and unberthing operations 5 while anchored or moored 6 in dry dock 7 when bunkering 8 during cargo operations
c Auxiliary systems may include:	1 steering gear, including emergency steering 2 lubricating oil and cooling water systems 3 pumps, bilge and sea water systems 4 refrigeration systems

Range Statement (continued)

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VARIABLE	SCOPE
c Auxiliary systems may include: (continued)	5 fuel and fuel oil systems
d Basic servicing may include:	1 routine servicing in accordance with established procedures 2 routine visual and performance checks 3 identification of poor performance or faults in the operation of auxiliary systems 4 identification of faulty equipment or fittings and arranging for repair or replacement 5 repair or replacement of faulty equipment and components 6 application of lubricants to moving parts of equipment in auxiliary systems
e Servicing tools and equipment may include:	1 hand tools, including screwdrivers, spanners, wrenches 2 lifting gear and equipment 3 greasing and lubrication tools 4 protective clothing and equipment such as: - i eye and ear protection - ii safety boots and helmet - iii dust and fume masks

VARIABLE	SCOPE
f Documentation and records may include:	1 relevant sections of State and Territory marine regulations, NSCV and USL Code related to the operation and servicing of auxiliary systems on small vessels 2 company servicing procedures 3 servicing schedules and records 4 manufacturer's instructions, specifications and recommended procedures 5 instructions, specifications and recommended procedures of manufacturer of servicing tools and materials
g Applicable legislation, regulations and codes may include:	1 State and Territory marine regulations related to the operation of small vessels 2 National Standard for Commercial Vessels and USL Code 3 relevant Commonwealth, State and Territory OH&S and pollution control legislation 4 relevant Australian standards

Unit Sector(s)

Not applicable.

Field

Field R Carry Out Operations on Equipment and Systems

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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