



Australian Government

MARC054 Operate propulsion transmission systems up to 1500 kW

Release: 2

MARC054 Operate propulsion transmission systems up to 1500 kW

Modification History

Release 2. This is the second release of this unit of competency in the MAR Maritime Training Package.

- Minor statement changes in unit Application
- Minor statement changes in Assessment Conditions.

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 propulsion transmission systems up to 1500 kW according to technical specifications and safe operating limits.

It includes preparing for operations, operating propulsion transmission systems and completing operations.

This unit applies to people working in the maritime industry in the capacity of Marine Engine Driver Grade 1 Near Coastal.

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 a Marine Engine Driver Grade 1 Near Coastal, as specified in Marine Order 505.

Seafarers seeking certification should check with AMSA.

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.

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| 1 Prepare for operation | 1.1 Risks to self, others and the environment are identified and precautions are taken to minimise risk according to organisational procedures

1.2 Routine pre-operational checks of propulsion transmission systems are completed prior to use according to manufacturer specifications and organisational procedures |
| 2 Operate propulsion transmission systems | 2.1 Suitable personal protective equipment (PPE) is selected and used according to organisational procedures

2.2 Propulsion transmission systems are operated in a safe and controlled manner

2.3 Performance of propulsion transmission system operations is monitored

2.4 Faults or malfunctions are identified and recorded according to organisational procedures

2.5 Faults or malfunctions are rectified and corrective actions are taken and recorded according to organisational procedures

2.6 Procedures to be undertaken in emergencies are recognised and implemented |
| 3 Complete operations | 3.1 Shutdown procedures are implemented according to manufacturer instructions and organisational procedures

3.2 Operational records are completed according to organisational 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 MARC016 Operate propulsion transmission systems up to 1500 kW.

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 MARC054 Operate propulsion transmission systems up to 1500 kW

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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:

- carrying out necessary calculations associated with managing propulsion transmission systems, including:
 - calculating gearbox ratios
 - propeller slip
 - theoretical distance
- maintaining records of operating and maintaining propulsion transmission systems and any related safety incidents
- monitoring various gauges and evaluating performance of propulsion transmission systems
- operating propulsion transmission system in a safe and controlled manner to manufacturer technical specifications.

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:

- basic reverse/reduction propulsion transmission systems operation
- bearings
- characteristics of propulsion transmission systems, including operational limits
- construction and materials of propulsion transmission systems
- fault identification on propulsion transmission systems
- lubricating and cooling systems for propulsion transmission systems
- manufacturer instructions for operating propulsion transmission systems
- maritime regulations, rules and instructions
- methods for controlling and managing the operation of shipboard propulsion transmission systems

- problems associated with propulsion transmission systems and appropriate preventative and remedial actions and solutions
- procedures for monitoring and evaluating performance of propulsion transmission systems
- propeller and intermediate shaft systems
- propeller shape, design and materials
- propeller types and arrangements, including fixed pitch and controllable pitch propellers
- propulsion transmission systems, including:
 - control system
 - gearbox and reduction gear arrangements
 - intermediate bearings
 - propeller types and arrangements
 - shafting arrangements
 - stern tube and their systems
 - transmission system
- recognising operational faults and problems that may occur with propulsion transmission systems and taking appropriate preventative and remedial actions
- relevant work health and safety (WHS)/occupational health and safety (OHS) legislation and policies
- seals and glands
- shafting materials
- steerable/rudder propellers
- stern and jet water drive
- stern tube bearing systems, including lubrication, materials and components
- types of gear trains.

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 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:

- a commercial vessel with inboard diesel propulsion power of greater than or equal to 375 kW or appropriate engine, propulsion plant and auxiliary system ashore
- applicable documentation, such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- tools, equipment, machinery, materials and personal protective equipment (PPE) currently used in industry.

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