



Australian Government

MARC016 Operate propulsion transmission systems up to 1500 kW

Release: 1

MARC016 Operate propulsion transmission systems up to 1500 kW

Modification History

Release 1. New unit of competency.

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.

This unit applies to engine workers in the maritime industry working as a Marine Engine Driver Grade 1 Near Coastal on vessels up to 1500 kW.

This unit has links to legislative and certification requirements.

Pre-requisite Unit

Not applicable.

Competency Field

C - Equipment Operations

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 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 is selected and used according to organisational procedures
	2.2	Propulsion transmission systems are operated in a safe and controlled manner

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| | 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 | Shut-down procedures are implemented according to manufacturer instructions and organisational procedures |
| | 3.2 | Operational records are completed according to organisational procedures |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range is restricted to essential operating conditions and any other variables essential to the work environment.

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| Propulsion transmission systems must include: | <ul style="list-style-type: none"> • control system • fixed pitch and controllable pitch propellers • gearbox and reduction gear arrangements • intermediate bearings • propeller types and arrangements • shafting arrangements • stern tube and their systems |
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- transmission system

Emergencies must include:

- failure or major fault in:
- propulsion transmission system or associated systems

Operational records must include:

- logbooks
- maintenance scheduling and maintenance records from organisation's safety management system
- plant and equipment manufacturer instructions and recommended procedures

Unit Mapping Information

This is a new unit. This unit is equivalent to MARC4006A 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 MARC016 Operate propulsion transmission systems up to 1500 kW

Modification History

Release 1. New unit of competency.

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 gear box ratios
 - theoretical distance
 - propeller slip
- maintaining records of operating and maintaining propulsion transmission systems and any related safety incidents
- operating emergency power transmission system
- reading and interpreting:
 - manufacturer instructions for operating propulsion transmission systems
 - maritime regulations, rules and instructions
- reading and monitoring various gauges and evaluating performance of propulsion transmission systems
- recognising problems that may occur with propulsion transmission systems and taking appropriate preventative and remedial action
- recognising when performance of propulsion transmission systems is unsatisfactory or outside of specified limits and taking appropriate action.

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:

- characteristics of propulsion transmission systems including operational limits
- fault identification on gearbox
- gearbox:
 - construction and materials
 - lubricating and cooling systems and components
- methods for controlling and managing the operation of shipboard propulsion transmission systems
- own ability and limits to rectify irregularities and faults.

- problems associated with propulsion transmission systems and appropriate preventative and remedial action and solutions
- procedures for monitoring and evaluating performance of propulsion transmission systems
- propeller shape, design and materials
- propeller types and arrangements including fixed pitch and controllable pitch propellers
- relevant work health and safety (WHS)/occupational health and safety (OHS) legislation and policies
- reverse and reduction gearbox construction and operation
- shaft:
 - bearings
 - 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 satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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.

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>