



Australian Government

MARM017 Survey vessel operational systems

Release: 1

MARM017 Survey vessel operational systems

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to undertake a periodic survey of vessel operational systems including propulsion and steering gear systems, deck machinery, pumping systems, power generation, refrigeration plant, liquid petroleum gas (LPG) systems for appliances and navigational systems.

This unit applies to people working in the maritime industry as a domestic commercial vessel marine surveyor and may form part of accreditation requirements for surveyors under Australian legislation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

M – Marine Surveying

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 Identify survey requirements

- 1.1 Relevant standards for vessel equipment and operational systems are identified, accessed and incorporated into survey plan as required
- 1.2 Survey scope and depth is confirmed against relevant standards and organisational requirements
- 1.3 Operational limits, certificate of operations and previous certificates of survey are reviewed for special conditions or equivalent solutions

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| | 1.4 | Equipment and operational system requirements for survey and range of variations are accurately identified, selected and tested for serviceability |
| 2 Prepare for survey | 2.1 | Operational systems to be surveyed for type, size and nature of vessel operations are accurately identified, reviewed and incorporated into survey plan |
| | 2.2 | Relationships between different operational systems are accurately interpreted and items to be surveyed are noted in survey plan |
| | 2.3 | Maintenance records are obtained and reviewed to confirm survey scope |
| 3 Conduct periodic survey of operational systems | 3.1 | Survey of operational systems is carried out according to regulatory requirements |
| | 3.2 | Primary and secondary operational systems and their components are surveyed according to survey schedule |
| | 3.3 | Changes to operational equipment or equivalent solutions are identified and examined for fitness both in or out of water as required by survey schedule |
| 4 Report and act on non-compliance | 4.1 | Non-compliance is detected, recorded and reported according to regulatory and organisational requirements |
| | 4.2 | Risk arising from non-compliance is detected, reported and communicated to relevant personnel |
| | 4.3 | Relevant provisions of legislation appropriate to level of risk detected are identified and followed |
| | 4.4 | Appropriate reports and documentation related to survey are developed and managed according to regulatory and organisational requirements |

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.

Relevant standards include one or more of the following:	• class rules and approvals • general servicing requirements for operational equipment • manufacturer guidelines and servicing requirements • Marine Orders • National Standard for the Administration of Marine Safety (NSAMS) Section 4 • NSCV and USL Code as applicable • organisational standards • safety data sheets/material safety data sheets (SDSs/MSDSs) • safety management systems (SMS) • safety of life at sea (SOLAS) • Australian/New Zealand Standards (AS/NZS): • AS/NZS 3000: Electrical installations • AS/NZS 3004: Electrical installations – verification guidelines • WHS/OHS
Survey scope and depth include one or more of the following:	• class of vessel • grandfathering conditions • survey cycle in accordance with NSAMS Chapter 4: • change of class survey • damage/repair or condition surveys • equivalent solution or deemed-to-satisfy surveys • periodic survey (either annual or bi-annual) • survey level of vessel
Operational limits include one or more of the following:	• as defined in certificate of operations and/or certificate of survey • testing requirements for electrical and fire systems
Regulatory requirements include one or more of the following:	• Marine Safety (Domestic Commercial Vessel) National Law • NSCV • regulations and Marine Orders • USL Code
Primary and secondary operational systems include one or more of the following:	• maintenance and servicing requirements as well as general condition of: • ballast • bilge pumping systems

- communication equipment
- electrical systems
- engines and auxiliaries
- fire and safety systems
- fuel systems
- hydraulic systems
- machinery systems
- navigational systems
- piping and pumping systems
- power generating plants such as hybrid systems, wind and solar generation
- propulsion systems
- refrigeration
- sanitary systems
- steering systems
- tanks

Equivalent solutions include one or more of the following:

- as noted in certificate of operation or certificate of survey
- as noted in NSCV Part B
- national register of exemptions and equivalent solutions

Unit Mapping Information

This unit replaces and is equivalent to MARM5007A Survey vessel operational systems.

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 MARM017 Survey vessel operational systems

Modification History

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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, performance criteria and range of conditions on at least one occasion and include:

- accurately interpreting relevant codes, standards, rules and regulations for vessel operational systems
- analysing and evaluating available data and observations to form logical conclusions
- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- carrying out engineering measurements and applying metric and imperial conversions
- developing effective planning documents
- ensuring currency of relevant WHS/OHS skills and knowledge
- inspecting and testing operational systems according to regulatory and organisational requirements
- communicating effectively with others as required, verbally and in writing
- implementing principles of WHS/OHS and marine environment protection measures
- negotiating and resolving conflict
- reading and interpreting:
 - machinery performance readings and indications
 - plans and drawings
 - technical information
- recognising and documenting faulty equipment
- selecting and using appropriate tools and equipment
- undertaking research and analysing reference material and manufacturer data sheets
- writing high quality reports.

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 range of conditions and include knowledge of:

- battery types, care and maintenance

- commercial vessel classifications and survey requirements for various operational systems and their components
- compatibility and durability of construction materials
- construction and layout of a typical commercial vessel, including layouts for pipework, tail shaft assembly and installed machinery
- environmental controls and regulations for primary, secondary or ancillary systems and their components
- ethical behaviour and industry codes of practice
- features and characteristics of typical faults and signs of deterioration in operational systems and components
- features of different engine types and sizes
- forms, causes and prevention of corrosion in a marine environment
- insurance, liability and professional indemnity requirements for self and others
- interaction of vessel structures and mechanical systems
- maintaining watertight integrity
- operational characteristics and performance specifications for different types of marine internal combustion engines and propulsion machinery usually found on vessels of up to 750 kW propulsion power
- principal features of fittings and machinery found on typical small vessels and characteristics of engine/plant and ancillary equipment
- procedures for:
 - checking fittings, machinery and components
 - reading and interpreting machinery performance readings and indications
- purpose and content of safety data sheets/material safety data sheets (SDSs/MSDSs)
- relevant sections of state and territory maritime regulations, National Standard for Commercial Vessels (NSCV) and Uniform Shipping Laws (USL) Code dealing with maintaining small vessels
- report writing requirements for a range of different survey tasks
- safety, environmental and hazard control precautions and procedures relevant to checking and basic maintenance of fittings and machinery
- typical problems related to inspecting and maintaining operational systems
- typical vessel and machinery specifications, operating manuals and specifications
- WHS/OHS legislation, policies and procedures.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must satisfy the National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) standards.

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.

Assessment must occur in workplace operational situations or where these are not available, in simulated workplace operational situations or an industry-approved marine operations site that replicates workplace conditions, where a survey of vessel operational systems can be conducted.

Resources for assessment include access to:

- relevant documentation including workplace procedures, regulations, codes of practice and operation manuals
- tools, equipment and personal protective equipment currently used in industry.

Performance should be demonstrated consistently over time and in a suitable range of contexts.

Links

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