



Australian Government

MARM002 Apply vessel construction theory to marine survey tasks

Release: 1

MARM002 Apply vessel construction theory to marine survey tasks

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to recognise how the construction and structural issues of commercial vessels relate to marine survey tasks.

This unit applies to people who assist marine surveyors or undertake administration duties in the maritime industry and/or marine surveying sector.

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 major parts of a hull relevant to commercial vessel inspections and surveys	1.1	Appropriate nomenclature is used to identify major parts of hull to be inspected as part of commercial vessel marine survey
	1.2	Structure of vessel hull in plan-view, profile, cross-section and perspective are accurately analysed across a range of different plans and drawings of vessels to determine survey requirements
	1.3	Use of plans and drawings in the survey are identified and applied during survey plan development

2 Identify commercial vessel types and their structure	2.1	Basic factors determining design of commercial vessels are outlined
	2.2	Features of vessel designed to ensure its watertight and weather tight integrity are identified and maintained
	2.3	Survey or inspection plan relating to vessel design is identified and implemented
	2.4	Vessel construction methods and materials are identified and used as the basis to determine inspection and survey tasks
3 Interpret basic vessel stability criteria	3.1	Basic stability theory as outlined in the National Standard for Commercial Vessels (NSCV) in relation to construction of a commercial vessel is accurately defined and basic stability calculations are performed
	3.2	Purpose of a vessel stability assessment is correctly explained
	3.3	Documentation and records required by surveyor to assess stability of vessel are identified and confirmed according to the NSCV
4 Apply vessel construction theory to survey	4.1	Different types of vessel materials are identified to determine scope of survey
	4.2	Survey plan appropriate to type of vessel is developed according to survey requirements and discussed with surveyor
	4.3	Feedback on survey plan is sought from others and possible changes or improvements are clarified where required and incorporated

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.

Appropriate nomenclature must include:

- all of the terms in the NSCV and referenced standards

Commercial vessels must include:

- any vessel currently defined as a commercial vessel in Marine Safety (Domestic Commercial Vessel) National Law

Plans and drawings include one or more of the following:

- any plan as referred to in the NSCV
- bilge diagram
- cargo arrangement/tank plan
- docking plans
- fire and evacuation
- general arrangement plan
- lines plan
- sections and views
- shell expansion plan
- system operating procedures

Basic factors must include:

- Australian and New Zealand Standards
- class rules
- NSCV
- Uniform Shipping Laws (USL) Code

Basic factors include one or more of the following:

- framing requirements
- plating
- scantlings

Basic stability theory includes one or more of the following:

- differences between transverse and longitudinal stability and causes of list and trim
- effects of density of sea water on draught and freeboard of a small vessel
- impact of design and hull shape on stability
- relationship between light displacement, loaded displacement and deadweight tonnage
- relationship between weight and buoyancy in relation to floating bodies reserve buoyancy equilibrium
- stability terms and definitions
- any other terms referred to in standard works on small ship naval architecture

Types of vessel materials include one or more of the following:

- ferrocement
- laminated materials and fabrics
- laminated timber
- moulded fibre composites
- riveting

- welded and riveted
- welded metal
- wood
- any other methods relevant to local commercial vessel market referred to in standard works on small craft construction

Unit Mapping Information

This unit replaces and is equivalent to MARM3002A Apply vessel construction theory to marine survey tasks.

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 MARM002 Apply vessel construction theory to marine survey tasks

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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:

- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- calculating vessel stability accurately, using basic stability criteria calculations
- developing and maintaining effective planning documents
- estimating, measuring and calculating time required to complete tasks
- interpreting, applying and conveying information verbally, in writing and diagrammatically
- interpreting numerical data
- reading and interpreting vessel specifications and drawings
- recording and reporting workplace information.

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:

- basic stability theory, and use and purpose of a vessel stability book
- commercial vessel types and their structure
- nomenclature relevant to vessel construction
- other guidance such as:
 - Marine Orders
 - Marine Safety (Domestic Commercial Vessel) National Law
 - National Standard for Commercial Vessels (NSCV)
- principal design features of small vessels related to stability and watertight integrity
- process of constructing commercial vessels
- WHS/OHS requirements and safe work practices.

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.

Resources for assessment include access to:

- relevant regulatory and equipment documentation including workplace procedures, regulations, codes of practice and operation manuals that impacts on work activities
- tools, equipment, material and personal protective equipment currently used in industry.

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

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