



Australian Government

MARM008 Evaluate vessel stability

Release: 1

MARM008 Evaluate vessel stability

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to evaluate stability of a commercial vessel for marine survey purposes using available stability information. It covers principles of stability data and calculations, how to calculate stability and role of surveyor in assessing stability information.

This unit applies to people working in the maritime industry as a marine surveyor assistant.

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 Determine data requirements	1.1	Effect of basic data, information and vessel stability calculations is identified, reviewed and applied to assessment of stability
	1.2	Basic data requirements for commercial vessels are correctly identified
	1.3	Importance and function of vessel stability book on survey task is accurately explained
2 Evaluate simplified stability data	2.1	Appropriate stability data and information required for size and type of vessel is identified and assessed for compliance against regulatory requirements

- 2.2 Calculated stability data is correlated with the stability criteria set out in stability book and is confirmed as an accurate evaluation of vessel stability condition by surveyor
 - 2.3 Precautions to rectify operations that may affect stability and watertight integrity of vessel are identified and confirmed with surveyor
 - 2.4 Actions to ensure weight distribution does not compromise vessel safety are identified, confirmed with surveyor and incorporated into survey task as required
 - 2.5 Actions to be taken in anticipation of environmental changes that may affect vessel stability are identified, confirmed with surveyor and incorporated into survey task as required
 - 2.6 Actions to be taken in emergency situations to maintain vessel stability within safe limits are identified, confirmed with and implemented promptly and effectively
- 3 Carry out reporting requirements**
- 3.1 Recorded calculations are reviewed by surveyor for accuracy and relevance
 - 3.2 Draft survey report is developed and reviewed with surveyor for accuracy and compliance
 - 3.3 Feedback provided on draft survey report is acknowledged and draft report is amended as required
 - 3.4 Storage and security of information is identified, and records are stored and filed according to organisational and regulatory 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.

Basic data includes one or • certificate of survey

more of the following:

- vessel log
- vessel plans and drawings
- vessel stability data book

Commercial vessels must include:

- vessels defined as commercial vessels in Marine Safety (Domestic Commercial Vessel) National Law

Precautions include one or more of the following:

- ballast management
- closing openings exposed to weather
- damage control measures to maintain, stabilise or restore watertight integrity of hull during an emergency
- managing distribution of load on vessel
- managing position, stowage and lashing of cargo, stores and equipment, and location of passengers
- taking precautions when using lifting equipment and associated gear

Emergency situations include one or more of the following:

- flooding when there is damage to hull
- inadequate securing of weights on board
- unplanned movement of heavy items or stores and equipment on board vessel

Unit Mapping Information

This unit replaces and is equivalent to MARM4004A Evaluate vessel stability.

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 MARM008 Evaluate vessel stability

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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:

- Analysing, planning and carrying out vessel stability calculation should be undertaken for at least five different types and size of vessels and include:
- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- carrying out accurate and reliable calculations associated with vessel stability using basic stability criteria calculations, including interpreting and correlating resultant data
- interpreting measurements and observations required when maintaining vessel stability
- providing high quality reports
- reading and interpreting vessel specifications and drawings
- reading, interpreting and applying simple instructions for maintaining vessel stability
- selecting and using relevant equipment according to instructions.

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, including:
 - equilibrium
 - impact of design and hull shape on stability
 - principles of stability
 - relationship between weight and buoyancy in relation to floating bodies
 - reserve buoyancy
 - terms and definitions
- difference between transverse and longitudinal stability, and causes of list and trim
- effects of density of water on draught and freeboard of vessel
- effects on vessel stability that has been bilged
- information contained in basic stability data book supplied to vessel and how this information is used to maintain vessel in a stable condition during operations

- marine Safety (Domestic Commercial Vessel) National Law
- principal design features of vessels related to stability and watertight integrity, such as:
 - maintenance and survey requirements necessary to maintain watertight integrity of vessel
 - openings in hull and on main deck of vessel and safe working practices that must be followed to maintain watertight integrity
- principal factors that affect operational stability of vessel and related measures that can be taken to maintain stability, including:
 - adding and removing weights
 - additions and alterations to vessel structure
 - free surface effect of slack tanks
 - operation of lifting equipment
 - roll period
 - stiff and tender condition
 - water on deck
- recording stability calculations in survey report
- relationship between lightship, loaded displacement and deadweight
- relevant WHS/OHS legislation and policies
- steps involved in bringing unstable vessel to a stable condition.

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 evaluating vessel stability can be conducted.

Resources for assessment include access to:

- relevant documentation including workplace procedures, regulations, codes of practice and operation manuals
- tools, equipment, materials and personal protective equipment currently used in industry required to evaluate vessel stability.

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

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