



**Australian Government**

**Assessment Requirements for MARL017  
Apply intermediate principles of naval  
architecture**

**Release: 1**

# Assessment Requirements for MARL017 Apply intermediate principles of naval architecture

## 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, 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
- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- identifying and applying relevant mathematical formulas and techniques to solve problems related to speed, fuel consumption and stability of commercial vessels
- identifying and interpreting numerical and graphical information, and performing mathematical calculations related to shipboard areas and volumes, vessel displacement, ship dimensions, centre of gravity, vessel speed and fuel consumption
- identifying, collating and processing information required to perform calculations related to speed, fuel consumption and stability of commercial vessels
- imparting knowledge and ideas through oral, written and visual means
- reading and interpreting written information needed to perform calculations related to the seaworthiness of commercial vessels
- solving problems using appropriate laws and principles
- using calculators in performing accurate and reliable mathematical calculations.

## 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:

- admiralty and fuel coefficients
- buoyancy
- centre of gravity:
  - KG, VCG and LCG
  - calculations
- density correction formula
- displacement
- draught alterations
- fuel consumption calculations
- hydrostatic pressure
- intermediate principles of naval architecture
- metacentre
- principle of displacement
- propellers and powering
- ship:
  - displacement
  - measurements
  - stability
  - stability calculations
- shipboard areas
- shipboard volumes
- Simpson's Rules
- structural members of a ship and the proper names of various parts
- symmetrical flooding
- tonnes per centimetre immersion (TPC)
- traverse stability
- trim and stress tables, diagrams and stress calculating equipment
- vessel speed calculations
- watertight integrity
- WHS/OHS requirements and 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 where intermediate principles of naval architecture can be applied.

Resources for assessment include access to:

- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- appropriate range of relevant operational situations in the workplace
- technical reference library with current publications on naval architecture
- tools, equipment, materials and personal protective equipment currently used in industry
- vessel diagrams and specifications and other information required for mathematical calculations related to shipboard areas and volumes, vessel displacement, centre of gravity, vessel speed, fuel consumption, vessel stability, power and symmetrical flooding.

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

## **Links**

Companion Volume implementation guides are found in VETNet -

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