Australian Government

# Assessment Requirements for MARL014 Apply intermediate principles of marine electrotechnology

**Release: 1**

# Assessment Requirements for MARL014 Apply intermediate principles of marine electrotechnology

## 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 formula and techniques to solve problems related to marine electrotechnology
- identifying and interpreting numerical and graphical information, and performing mathematical calculations such as the relationship between starting torque and applied voltage in three phase AC induction motors
- identifying, collating and processing information required to perform calculations related to marine electrotechnology
- performing accurate and reliable mathematical calculations using a calculator
- reading and interpreting written information needed to perform intermediate electrical calculations
- solving problems using appropriate laws and principles.

## 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:

- AC induction motors
- AC principles
- batteries
- circuit diagrams
- DC motors
- difference between AC and DC
- effective verbal, written and visual communication strategies
- electrical:
  - current
  - power
  - units of measurement
- electromagnetic:
  - force
  - induction
- Faraday's and Lenz's Laws of Electromagnetic Induction
- intermediate electrical circuits
- intermediate principles of marine electrotechnology
- Kirchhoff's circuit laws
- magnetic circuits
- National and international maritime regulations, IMO Conventions and Codes applicable to the operation of electrical and electronic control equipment on vessels of typically unlimited propulsion power
- Ohm's Law
- polyphase AC circuits
- principles of:
  - electrical safety
  - electrolytic action
  - electromagnetism
- parallel circuits
- principles and procedures for electrical and electronic measurement
- series circuits
- shipboard DC machinery
- 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 marine electrotechnology can be applied.

Resources for assessment include access to:

- appropriate range of relevant operational situations in the workplace
- electrical diagrams, specifications and other information required for performing intermediate electrical calculations
- relevant documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant tools, equipment, materials and personal protective equipment currently used in industry
- technical reference library with current publications on intermediate marine electrotechnology.

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