



Australian Government

Assessment Requirements for MARL018

Apply advanced principles of marine electrotechnology

Release: 1

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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 complex problems related to marine electrotechnology
- identifying and interpreting numerical and graphical information, and performing mathematical calculations to perform tasks such as using phasor diagrams and mathematical expressions to explain the effects of loads and excitation on synchronous motors
- identifying, collating and processing information required to perform complex calculations related to marine electrotechnology
- imparting knowledge and ideas through verbal, written and visual means
- reading and interpreting written information needed to perform complex electrical calculations
- solving problems using appropriate laws and principles
- using calculators to perform complex 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:

- AC principles
- advanced principles of marine electrotechnology
- circuits:
 - resistance
 - inductance
 - capacitance
- complex number theory
- DC generators
- DC motors
- difference between AC and DC
- electrical:
 - circuits
 - current
 - power
 - safety
 - units of measurement
- electromagnetic:
 - force
 - induction
- electrical meters:
 - energy meters
 - frequency meters
 - induction disc watt meters
 - power factor meters
- Ohm's Law
- operating principles of:
 - DC generators
 - DC motors
 - electrical instrumentation
 - parallel circuits
- parallel operation of AC and DC generators
- power factor
- power factor correction mechanisms
- resistance
- single and three-phase transformers
- synchronous motors and generators
- 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 advanced principles of marine electrotechnology can be applied.

Resources for assessment include access to:

- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- electrical diagrams, specifications and other information required for performing advanced electrical calculations
- relevant regulatory and equipment documentation that impacts on work activities
- technical reference library with current publications on marine electrotechnology
- tools, equipment, materials and personal protective equipment currently used in industry.

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>