Australian Government

# Assessment Requirements for MARC035 Operate and maintain extra low and low voltage electrical systems and equipment

**Release: 1**

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## Modification History

Release 1. New unit of competency. Licensing/regulatory information has been incorporated in accordance with Regulatory requirements. Assessment Requirements have been strengthened in accordance with Regulatory requirements.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying safety requirements throughout the work sequence, including the use of personal protective equipment (PPE)
- carrying out maintenance tasks, including:
  - replacing fuses
  - testing battery voltage and specific gravity
  - topping up battery electrolyte levels
  - testing charging system voltage output
- completing all work to specifications
- communicating with other crew members
- connecting and disconnecting shore power
- ensuring correct requirements and details of basic maintenance of electrical systems and equipment are available
- implementing safe and environmentally responsible work practices in testing and maintenance activities
- initiating timely action in response to defects or damage
- locating, interpreting and applying manufacturer specifications for electrical systems and equipment
- operating direct current (DC) systems and conducting operator preventive maintenance according to manufacturer recommendations, regulations and vessel operating procedures to ensure safe operation
- operating extra low and low voltage electrical systems and equipment according to manufacturer recommendations, regulations and vessel operating procedures to ensure safe operation
- performing isolation, lock out and tag out procedures
- recognising and rectifying electrical system faults and, where necessary, taking steps to make them immediately safe, including:
  - battery faults
  - failure of alternators

    - failure of starter motors
- selecting and using appropriate processes, tools and equipment.

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- AC system not exceeding 50 V and DC systems not exceeding 32 V
- basic care and fault recognition of electrical systems and equipment
- batteries:
    - care and maintenance
    - hazards
    - types
- charging systems:
    - alarms or indicators
    - regulators
- electrical systems:
    - above 32 V DC
    - above 50 V AC up to 415 V AC
- fault identification, location and safety implications
- how to recognise and rectify electrical system faults and, where necessary, steps to make them immediately safe, including:
    - battery faults
    - failure of alternators
    - failure of starter motors
    - faults with shore power connections including phase rotations using on-board switching equipment
    - blown fuses
    - tripping circuit breakers
- method of connecting batteries
- protective devices on switchboards
- relevant state/territory training and qualification requirements for carrying out installation, maintenance and/or repair of electrical systems and equipment
- shore power connection
- starter motors, alternators and associated equipment:
    - maintenance
    - operation
- uses of fuses and circuit breakers – selection of correct capacity
- work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices.

# Assessment Conditions

Assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment. As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment. 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.

Practical assessment must occur in a workplace, or realistic simulated workplace, under the normal range of workplace conditions. Simulations and scenarios may be used where situations cannot be provided in the workplace or may occur only rarely, in particular for situations relating to emergency procedures and adverse weather conditions where assessment would be unsafe, impractical or may lead to environmental damage.

Resources for assessment must include access to:

- applicable documentation, such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- a commercial vessel with inboard diesel propulsion power of ≥ 150 kW or appropriate engine, propulsion plant, and auxiliary equipment with low and extra low voltage (ELV) electrical systems ashore
- tools, equipment, machinery, materials and relevant PPE currently used in industry.

# Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2