



**Australian Government**

# **MARC003 Operate and maintain extra low and low voltage electrical systems and equipment**

**Release: 1**

# **MARC003 Operate and maintain extra low and low voltage electrical systems and equipment**

## **Modification History**

Release 1. New unit of competency.

## **Application**

This unit involves the skills and knowledge required to operate, test and maintain extra low and low voltage electrical systems and equipment.

This unit applies to engine workers in the maritime industry working as a Marine Engine Driver Grade 3 Near Coastal on vessels up to 500 kW or as a Marine Engine Driver Grade 2 Near Coastal on vessels up to 750 kW or as a Marine Engine Driver Grade 1 Near Coastal on vessels up to 1500 kW.

**WARNING:** Relevant state/territory training and qualification requirements need to be fulfilled by any persons carrying out installation, maintenance and/or repair of refrigeration equipment especially with regard to preventing the escape of refrigerants into the atmosphere and to electrical work.

## **Pre-requisite Unit**

Not applicable.

## **Competency Field**

C - Equipment Operations

## **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 Operate electrical systems and equipment**

- 1.1 Routine pre-operational checks are carried out on electrical systems and equipment according to manufacturer specifications
- 1.2 Systems and equipment are operated according to manufacturer specifications
- 1.3 Faults are identified and appropriate action is taken to rectify them
- 1.4 Faults are reported and logged promptly and accurately to appropriate personnel

### **2 Carry out routine maintenance on electrical systems and equipment**

- 2.1 Tasks are planned and sequenced in conjunction with others involved in or affected by maintenance work
- 2.2 Tools and equipment are selected and checked for serviceability
- 2.3 Components to be maintained are isolated
- 2.4 Systems are tested and test results are compared with manufacturer specifications
- 2.5 Maintenance tasks are carried out to specification
- 2.6 Unserviceable components are tagged according to organisational procedures and appropriate personnel are notified

### **3 Isolate faulty components for repair**

- 3.1 Faulty items or components are isolated according to workplace procedures
- 3.2 Serviceable items are fitted according to manufacturer specifications
- 3.3 Operational check is carried out on equipment or system to ensure its compliance with manufacturer specification

### **4 Clean up and complete documentation**

- 4.1 Work area is cleared and cleaned
- 4.2 Materials are disposed of or recycled according to legislative and workplace requirements
- 4.3 Tools and equipment are cleaned, checked and stored

according to workplace procedures

- 4.4 Maintenance report is completed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range is restricted to essential operating conditions and any other variables essential to the work environment.

- Electrical systems and equipment include one or more of the following:
- alternators
  - batteries
  - charging systems
  - fuses and circuit breakers
  - generators
  - motors
  - shore power connection
  - starter motors

- Faults include one or more of the following:
- battery faults
  - failure of alternators to produce voltage
  - failure of starter motors
  - faults with shore power connections including phase rotations
  - operation of fuses and circuit breakers

Maintenance tasks include one or more of the following:

- replacing fuses
- testing batteries, voltage, electrolyte and rectifying faults
- testing charging system voltage output

## Unit Mapping Information

This is a new unit. This unit is equivalent to MARC2003A Operate and maintain extra low and low voltage electrical systems and equipment.

## Links

MAR Maritime Training Package Companion Volume Implementation Guide at: -  
[http://companion\\_volumes.vetnet.education.gov.au/Pages/TrainingPackage.aspx?pid=22](http://companion_volumes.vetnet.education.gov.au/Pages/TrainingPackage.aspx?pid=22)