



Australian Government

MARC046 Employ tools, equipment and materials in a shipboard context

Release: 2

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Modification History

Release 2. This is the second release of this unit of competency in the MAR Maritime Training Package.

- Minor statement changes in unit Application.

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package.

Application

This unit involves the skills and knowledge required to employ tools, equipment and materials to perform maintenance activities on a vessel.

It includes the use of hand, power and machine tools, welding equipment, heat treatment processes, soldering operations, adhesives and bonding materials in performing routine and non-routine maintenance activities.

This unit applies to people working in the maritime industry in the capacity of:

- Electro-Technical Officer (STCW Electro-Technical Officer Unlimited)
- Engineer Class 3 Near Coastal
- Engineer Watchkeeper (STCW Engineer Watchkeeper Unlimited).

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit.

- This unit is one of the requirements to obtain Australian Maritime Safety Authority (AMSA) certification as an Engineer Class 3 Near Coastal as specified in Marine Order 505.
- This unit is one of the requirements to obtain certification as an Electro-Technical Officer (STCW Electro-Technical Officer Unlimited) or Engineer Watchkeeper (STCW Engineer Watchkeeper Unlimited) and to meet regulatory requirements this unit must be delivered consistent with Marine Orders and with the relevant sections of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).
- Those regulatory requirements include STCW International Maritime Organization (IMO) model course competencies and areas of knowledge, understanding and proficiency, together with the estimated total hours required for lectures and practical exercises. Teaching staff should note that timings are suggestions only and should be adapted to suit individual groups of trainees depending on their experience, ability, equipment and staff available for training.

Training providers seeking to offer this unit of competency must gain AMSA approval before the unit is offered.

Seafarers seeking certification should check with AMSA.

Pre-requisite Unit

Not applicable.

Competency Field

C – Equipment Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Follow safe work practices

2 Carry out heat treatment

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|------------|---|
| 1.1 | Work health and safety (WHS)/occupational health and safety (WHS/OHS) procedures relevant to using tools and equipment are complied with |
| 1.2 | Safety hazards are identified and reported according to safety and vessel procedures |
| 1.3 | Prior to use, tools and equipment needed to carry out maintenance activities are checked for correct operation and safety according to safety and vessel procedures |
| 1.4 | Before commencing maintenance activities, isolation precautions are implemented according to safety and vessel procedures |
| 2.1 | Requirements of job are determined from engineering drawings, job sheet or supervisor |
| 2.2 | Heat treatment equipment is selected for required heat treatment according to safety, workplace and manufacturer requirements |
| 2.3 | Equipment is set up and used according to standard operating procedures (SOPs) and manufacturer |

- instructions
- 2.4** Personal protective equipment (PPE) is used according to SOPs
 - 2.5** Emergency procedures are complied with according to approved safety instructions
 - 2.6** Safety signs and symbols are identified and complied with according to approved safety instructions
 - 2.7** Heat treatment process is applied according to job, safety and workplace requirements
 - 2.8** Hazardous conditions are identified, and risk control measures are implemented to maintain a safe work environment
- 3 Use hand tools**
- 3.1** Hand tools are used according to workplace procedures, WHS/OHS requirements and manufacturer instructions
 - 3.2** Faults with hand tools and equipment are identified and reported to appropriate personnel
- 4 Use hand power tools**
- 4.1** Hand power tools are used according to workplace procedures, WHS/OHS requirements and manufacturer instructions
 - 4.2** Faults with hand power tools and equipment are identified and reported to appropriate personnel
- 5 Perform pipe work**
- 5.1** Job requirements are determined from engineering drawings, job sheet or supervisor
 - 5.2** Sequence of operations is determined according to workplace, WHS/OHS and job requirements
 - 5.3** Pipe work is fabricated and joined according to relevant standards and job, safety and workplace requirements
 - 5.4** Pipe work is inspected for defects according to workplace procedures
 - 5.5** Pipe work is installed in specified location without damage or distortion to pipe work, surrounding environment or other services
 - 5.6** Type of filters and strainers in piping systems are identified using relevant engineering drawings and specifications

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| | 5.7 | Pipe work is tested for compliance with job specification and workplace requirements |
| 6 Use machine tools | 6.1 | Job requirements are determined from engineering drawings, job sheet or supervisor |
| | 6.2 | Sequence of operations is determined according to workplace, WHS/OHS and job requirements |
| | 6.3 | Machine tools are selected according to workplace procedures, WHS/OHS requirements and manufacturer instructions |
| | 6.4 | Machining operations are performed according to workplace, WHS/OHS and job requirements |
| | 6.5 | Components are measured in line with workplace, WHS/OHS and job requirements |
| | 6.6 | Machine is adjusted and maintained according to workplace, safety, manufacturer and job requirements |
| 7 Perform welding and thermal cutting operations | 7.1 | Job requirements are determined from engineering drawings, job sheet or supervisor |
| | 7.2 | Materials are prepared for welding using correct tools, equipment, materials and procedures |
| | 7.3 | Materials are welded using appropriate welding process according to relevant standards and job, safety and workplace requirements |
| | 7.4 | Joints are welded according to relevant standards and job, safety and workplace requirements |
| | 7.5 | Oxygen fuel gas cutting torch is used to cut straight lines and curves in mild steel plate up to 10 mm thick according to relevant standards and job, safety and workplace requirements |
| | 7.6 | Weld is inspected according to relevant standards, and job and workplace requirements |
| 8 Perform soldering operations | 8.1 | Job requirements are determined from engineering drawings, job sheet or supervisor |
| | 8.2 | Materials are prepared for soldering using correct tools, equipment, materials and procedures |

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| | 8.3 | Materials are soldered according to relevant standards and job, safety and workplace requirements |
| | 8.4 | Soldered joints are performed according to relevant standards and job, safety and workplace requirements |
| | 8.5 | Soldered joints are inspected according to relevant standards and job, and workplace requirements |
| | 8.6 | Materials are desoldered using correct procedure and minimising damage to materials/components |
| 9 | Select and use sealants, adhesives, bonding agents, gaskets and packings | |
| | 9.1 | Job requirements are determined from engineering drawings, job sheet or supervisor |
| | 9.2 | Gaskets and packings are selected and used according to job requirements and manufacturer/component supplier instructions |
| | 9.3 | Sealants and adhesives are selected and used according to job requirements and manufacturer/component supplier instructions |
| | 9.4 | Plastic bonding is performed according to job requirements and manufacturer/component supplier instructions |
| | 9.5 | Sealants, adhesives, bonding agents, gaskets and packings are stored according to workplace and manufacturer/component supplier instructions |

Foundation Skills

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

Range of Conditions

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

Unit Mapping Information

This unit replaces and is equivalent to MARC018 Employ tools, equipment and materials in a

shipboard context.

Links

Companion Volume Implementation Guides are found in VETNet -

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