



Australian Government

MARC018 Employ tools, equipment and materials in a shipboard context

Release: 2

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Modification History

Release 2. Duplication of information removed from Application.

Release 1. New unit of competency.

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 the work of a Marine Engineer Class 3 Near Coastal.

This unit has links to legislative and certification requirements.

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 Follow safe work practices

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) procedures relevant to using tools and equipment in a shipboard context 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

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| | 1.4 | Before commencing maintenance activities, isolation precautions are implemented according to safety and vessel procedures |
| 2 Carry out heat treatment | 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 and manufacturer instructions |
| | 2.4 | Personal protective equipment (PPE) is used according to standard operating procedures |
| | 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 implement 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 onboard 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 shipboard piping systems are located and determined using relevant engineering drawings and specifications
- 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
	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

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.

Heat treatment process include one or more of the following:

- annealing
- hardening
- normalising
- tempering

Hand tools include one or more of the following:

- anvil
- benders
- brushes
- chisels
- chucks
- cutters
- drills
- drivers
- files
- gear pullers
- hacksaws
- hammers
- nippers
- pliers
- punchers
- reamers
- scissors
- scrapers
- spanners
- swage block
- taps and dies
- vices
- wrenches

Hand power tools include one or more of the following:

- drills
- grinders
- hand shear and nibbler
- impact wrenches
- portable jigsaw
- sanders

Pipe work defects include one or more of the following:

- ovality
- thinning

Machine tools include one or more of the following:

- drills
- grinder
- lathes
- milling machines

Welding process include one or more of the following:

- gas metal arc welding
- gas tungsten arc welding
- oxy-acetylene welding
- shielded metal arc welding

Joints include one or more of the following:

- butt
- fillet joints:
- corner joints
- lap joints
- tee joint plate edge preparations
- throat length with concave and convex reinforcement

Soldered joints include one of the following :

- hard
- soft

Unit Mapping Information

This is a new unit. This unit is equivalent to MARC5001A Employ tools, equipment and materials.

Links

Companion Volume implementation guides are found in VETNet -

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