



Australian Government

Assessment Requirements for 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.

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:

- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- communicating procedures associated with using hand and machine tools and equipment verbally and in writing
- identifying methods, procedures and materials needed for operating hand and power tools on vessels
- initiating timely action in response to defects or damage
- reading and interpreting written information related to operating tools and equipment used for maintenance operations onboard vessels, including technical manuals and specifications
- safely using hand and machine tools.

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:

- characteristics, limitations and use of metals and non-metallic materials used in ship construction and repair
- hand and power tools and components, including:
 - maintenance
 - operational characteristics and performance specifications
 - types
- hand tools, including:
 - 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, including:
 - drills
 - grinders
 - hand shear and nibbler
 - impact wrenches
 - portable jigsaw
 - sanders
- heat treatment, including:
 - applications, equipment and processes
 - batch and/or piece loading of furnaces
 - emergency procedures
 - hazards and control measures associated with heat treatment, including housekeeping
 - material characteristics
 - material condition during heat treating process
 - material preparation, quenching, and preheating requirements
 - safe loading of furnaces
 - safe work practices and procedures
 - use and application of personal protective equipment (PPE)
- heat treatment process, including:

- annealing
- hardening
- normalising
- tempering
- joints, including:
 - butt
 - corner joints
 - fillet joints
 - lap joints
 - tee joint plate edge preparations
 - throat length with concave and convex reinforcement
- machine tools, including:
 - basic marking out techniques, including datum points/lines
 - benefits of using correctly sharpened cutting tools
 - correct methods of mounting a variety of cutting tools
 - geometry of cutting tools for a range of materials and applications
 - hazards and control measures associated with general machining
 - machine operation
 - methods of work holding
 - reasons for selecting chosen sequence of operations
 - safe work practices and procedures
 - safety issues with regard to correct clamping, guards and shields
 - selection of feeds and speeds to suit a range of materials and operations within the scope of this unit
 - situations indicating need for machine adjustment, lubrication and cleaning
 - techniques, tools and equipment to measure materials and machined components
 - tolerances and limits of size
 - use and application of PPE
- machine tools, including:
 - drills
 - grinder
 - lathes
 - milling machines
- materials used in ship construction and repair, including:
 - limitations of materials
 - metallurgy principles
 - properties of materials
 - types of materials
- national and international regulations, International Maritime Organization (IMO) conventions and codes, including Australian Maritime Safety Authority (AMSA) Marine

Orders applicable to managing plant and equipment maintenance and repair operations on vessels

- own ability and limits to rectify irregularities and faults
- pipe work, including:
 - capping/sealing pipe work and assembly methods
 - defects:
 - ovality
 - thinning
 - identifying location/layout of pipe work and assemblies, and application and characteristics of enclosure/hanging/supporting systems
 - installation techniques
 - leak testing, applications and uses
 - pipe work, ancillary installation and joining procedures
 - purging techniques, applications and precautions
- procedures for completing temporary and permanent repair and/or replacement procedures for plant and equipment onboard vessels at sea, alongside and in dry dock
- properties and parameters of engineering materials
- safety data sheets (SDS)/material safety data sheets (MSDS)
- sealants, gaskets, bonding agents, adhesives and packing, including:
 - dangers of working with sealants and adhesives
 - gasket installation procedures
 - operating principles of gaskets and their relationship to other components
 - sealant and adhesives application techniques
 - types, characteristics, uses and limitations of sealants and adhesives
- soldering, including:
 - cleaning solutions and properties, and cleaning procedures
 - heat and damage protection procedures
 - methods of joint preparation
 - procedures for preventing electrostatic discharge damage
 - properties of fluxes and their uses
 - reworking procedures and precautions
 - soldered joint testing and inspection procedures
 - use and application of PPE for manual soldering/desoldering
- soldered joints, including:
 - hard
 - soft
- testing procedures for materials under load, including:
 - compressive load testing procedures
 - shear load testing procedures
 - tensile load testing procedures

- welding, including:
 - characteristics and properties of common metals and welding materials
 - effect of gas and electrical welding operations on metals
 - effect of various treatments on a range of commonly used metals
 - hazards and control measures associated with gas and electrical welding, including housekeeping
 - use and application of PPE
 - welding safety practices and procedures
 - welding processes:
 - gas metal arc welding
 - gas tungsten arc welding
 - oxy-acetylene welding
 - shielded metal arc welding
- work health and safety (WHS)/occupational health and safety (WHS/OHS) legislation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within 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
- tools, equipment, machinery, materials and relevant personal protective equipment (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>

