



Australian Government

MARB037 Maintain and repair bridge navigation equipment and ship communication systems

Release: 1

MARB037 Maintain and repair bridge navigation equipment and ship communication systems

Modification History

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 maintain and repair bridge navigation equipment and ship external communication systems.

It includes reviewing, maintaining and managing bridge navigation and communication equipment systems.

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

- Electro-Technical Officer (STCW Electro-Technical Officer Unlimited)
- Engineer Class 1 (STCW Chief Engineer Unlimited)
- Engineer Class 2 (STCW Second Engineer Unlimited).

Bridge navigation equipment includes:

- automatic identification system (AIS)
- echosounder systems
- electronic chart display and information system (ECDIS)
- global navigation satellite systems (GNSS)
- inertial navigation system
- marine autopilots
- navigation lights and search lights
- radar
- ship compass equipment
- ship horn and sound signal system
- speed logs
- voyage data recorders
- wind trackers.

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 Electro-Technical Officer (STCW Electro-Technical Officer Unlimited), Engineer Class 1 (STCW Chief Engineer Unlimited) or Engineer Class 2 (STCW Second Engineer 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.

Pre-requisite Unit

Not applicable.

Competency Field

B – Equipment Checking and Maintenance

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1. Review ship bridge navigation equipment and communication systems

PERFORMANCE CRITERIA

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

- 1.1** Bridge navigation equipment and ship communication systems are interpreted from ships technical drawings and/or specifications
- 1.2** Bridge navigation equipment and communication systems are identified, visually inspected and tested in accordance with shipboard procedures
- 1.3** Hazards are identified, risks assessed and control measures implemented
- 1.4** Measuring and calibrating instruments are used in accordance with manufacturer specifications
- 1.5** Operations are carried out in accordance with operational manuals, rules and procedures to ensure safety of operations

2. Maintain bridge navigation equipment

- 2.1** Bridge navigation equipment is visually inspected and tested in accordance with maintenance specification and plan
- 2.2** Bridge navigation equipment and associated plant and safety systems are isolated and electrical hazards identified in accordance with safe working practices
- 2.3** Bridge navigation equipment malfunctions detected during equipment maintenance are documented in service records and effect on associated plant and safety systems specified accurately
- 2.4** Bridge navigation equipment faults are rectified by competent person in accordance with shipboard procedures and legislative requirements
- 2.5** Bridge navigation equipment is dismantled and re-assembled in accordance with manufacturer safety guidelines and shipboard instructions
- 2.6** Bridge navigation equipment rectification plans are justified in service/maintenance records
- 2.7** Maintenance work is checked to verify that it conforms with technical specifications
- 2.8** Bridge navigation equipment restoration actions are taken in a timely manner by the method most suitable and appropriate to the ship prevailing circumstances and conditions

3. Maintain ship communication systems

- 3.1** Ship communication system is visually inspected and tested in accordance with maintenance specification and plan
- 3.2** Working in flammable areas hazards are identified, risks assessed and control measures implemented in accordance with shipboard procedures
- 3.3** Communication systems restoration actions are undertaken by the method most suitable and appropriate to the ship prevailing circumstances and conditions
- 3.4** Faults are rectified in accordance with shipboard procedures and legislative requirements
- 3.5** Clear and concise communication is used when testing internal communication systems

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| 4. Clean up and complete documentation | 4.1 Work area is cleared and cleaned |
| | 4.2 Work area is made safe and all equipment and plant returned to service in accordance with shipboard procedures and legislative requirements |
| | 4.3 Materials are disposed of or recycled in accordance with legislative and workplace requirements |
| | 4.4 Tools and equipment are cleaned, checked and stored in accordance with workplace procedures |
| | 4.5 Maintenance reports are completed in accordance with procedures |

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 is a new unit. No equivalent unit.

Links

Companion Volume implementation guide can be found in VetNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>

Assessment Requirements for MARB037 Maintain and repair bridge navigation equipment and ship communication systems

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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 work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices
- carrying out fault finding and procedural maintenance on hardware and software of the following bridge navigation equipment, on at least two separate occasions:
 - automatic identification system (AIS)
 - echosounder systems
 - electronic chart display and information system (ECDIS)
 - global navigation satellite systems (GNSS)
 - inertial navigation system
 - marine autopilots
 - navigation lights and search lights
 - ship compass equipment
 - ship horn and sound signal system
 - speed logs
 - voyage data recorders
 - wind trackers
- detecting machinery malfunction, location of faults and actions to prevent damage
- dismantling and identifying component parts of the following typical ship's bridge navigation equipment on at least one occasion:
 - radar
 - ship gyrocompass
- using electrical measuring and testing instruments.

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:

- bridge navigation equipment, including:
 - construction, operation, maintenance and fault finding of:
 - AIS
 - echosounder systems
 - ECDIS
 - GNSS
 - inertial navigation system
 - marine autopilots
 - navigation lights and search lights
 - radar
 - ship compass equipment
 - ship horn and sound signal system
 - speed logs
 - voyage data recorders
 - wind trackers
- electrical and electronic systems operating in flammable areas
- principles and maintenance procedures of:
 - bridge navigation equipment
 - internal and external communication systems
- relevant industry standards and manufacturer specifications
- safety precautions and procedures, including electrical risk mitigation control measures
- WHS/OHS requirements, including safe working practices.

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, safety management system (SMS), workplace procedures and operational manuals
- radar and ship gyrocompass equipment
- tools, bridge navigation equipment, machinery, materials and personal protective equipment (PPE) currently used in industry.

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