



**Australian Government**

# **MARH6002A Manage the navigation of a vessel 500 gross tonnage or more**

**Release 1**

## **MARH6002A Manage the navigation of a vessel 500 gross tonnage or more**

### **Modification History**

Release 1

This is the first release of this unit.

### **Unit Descriptor**

This unit involves the skills and knowledge required to manage the planning of a voyage and the navigation of a vessel of 500 gross tonnage or more.

### **Application of the Unit**

This unit applies to maritime workers working in the maritime industry as a Master Unlimited.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

### **Employability Skills Information**

This unit contains employability skills.

### **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- 1 **Oversee development of passage plan**
  - 1.1 Requirements of passage are established
  - 1.2 Reasons for planned route are supported by facts and statistical data obtained from relevant *sources and publications*
  - 1.3 Positions, courses, distances and time calculations are checked for correctness within accepted accuracy standards for navigational equipment
  - 1.4 All potential navigational hazards are accurately identified
- 2 **Develop and implement watchkeeping arrangements and procedures**
  - 2.1 *Watchkeeping arrangements* and procedures are developed according to principles bridge resource management, and organisational and regulatory requirements
  - 2.2 Principles of resource management are appropriately applied in establishing watchkeeping arrangements and procedures and in developing an effective bridge working system
  - 2.3 Communication strategies are developed to link watchkeeping procedures with all aspects of vessel operations
  - 2.4 Fatigue management strategies are developed according to organisational and regulatory requirements
  - 2.5 Corrective action procedures are developed and monitored
  - 2.6 Procedures for reporting, recording and responding to emergencies and non-compliance are established
- 3 **Monitor bridge team in implementing passage plan**
  - 3.1 Work schedule for bridge team is detailed according to bridge resource management principles
  - 3.2 Risk control measures are evaluated against passage plan
  - 3.3 Navigation requirements are communicated to bridge team
  - 3.4 Individuals are fully briefed and responsibilities coordinated
  - 3.5 Navigation tasks are carried out according to passage plan
  - 3.6 Ongoing checks and *position determination* are conducted according to organisational procedures
  - 3.7 *Non-routine problems* related to navigation of vessel are solved
  - 3.8 Navigational data is signed off according to organisational procedures

- 3.9 Work schedule for bridge team is detailed according to bridge resource management principles
- 4 Interpret and evaluate information from electronic navigational system**
- 4.1 Data from radar plotting sheet is interpreted and analysed to anticipate potential collisions
- 4.2 Data produced by other electronic navigational aids is interpreted and used to assist navigational command decisions, taking into account known limitations and errors associated with each type of aid
- 4.3 Information obtained through a single vessel or multiple vessel analysis of radar plots or other electronic navigational data is used to make command decisions on action needed to avoid collisions
- 4.4 Radar data is used to obtain position fix for vessel using electronic bearing lines and variable range markers
- 5 Navigate in complex situations**
- 5.1 Measurements and observations of sea and weather conditions are used to determine vessel speed and direction in *complex situations*
- 5.2 Information from bridge equipment is interpreted to identify navigational hazards and to fix vessel position
- 5.3 Alterations to vessel course or speed are made to meet prevailing circumstances and changing conditions
- 5.4 Navigational manoeuvres are conducted within safe operational limits of vessel
- 5.5 Details of passage are recorded in vessel log according to regulations
- 5.6 Variations to planned route are documented prior to archiving on completion of voyage
- 6 Manage emergencies**
- 6.1 Bridge team is taken charge of when called to bridge in response to an *emergency*
- 6.2 Safety management system procedures are implemented when taking over bridge watch from officer of the watch
- 6.3 Appropriate action is taken to initiate search and rescue procedures on receipt of distress signal
- 6.4 Advice is provided to watchkeeper regarding response to emergency situations

- 7 Maintain navigational equipment**
- 7.1 Navigational charts, nautical publications and related documentation are stored and maintained according to organisational procedures
  - 7.2 Inventory of navigational charts, nautical publications and related documentation is established and kept according to organisational procedures
  - 7.3 Navigational charts, nautical publications and related documentation are ordered and updated from relevant sources to ensure available data needed for voyage planning is current
  - 7.4 Performance checks and tests of navigation position fixing instruments and systems are carried out according to organisational procedures and manufacturer instructions
- 8 Prepare reports and documentation relevant to passage**
- 8.1 Passage information is recorded and reported in required format, style, structure and timeframe
  - 8.2 All information is recorded and reported according to legislative requirements
  - 8.3 Technology is used to store and retrieve information

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required Skills:

- Accurately identify all potential navigational hazards
- Choose the most appropriate primary method for fixing vessel position given the prevailing circumstances and conditions
- Conduct performance checks of navigation position fixing instruments and systems
- Correctly calculate positions, courses, distances and time within accepted accuracy standards for navigational equipment
- Determine and allow for errors of magnetic and gyro-compass
- Determine position in all conditions by celestial observations, terrestrial observations and using modern navigational aids within accepted accuracy levels
- Enumerate the equipment, charts and nautical publications required for the voyage and appropriate to the safe conduct of the voyage
- Establish and maintain watchkeeping arrangements in compliance with international regulations and guidelines so as to ensure the safety of navigation, protection of the marine environment and the safety of the vessel and persons on board
- Properly assess accuracy of fix
- Recognise faulty equipment and readings, and take appropriate action
- Recognise problems that may be experienced when planning and navigating a passage, and take appropriate action
- Report according to General Principles for Ship Reporting Systems and vessel traffic service (VTS) procedures
- Support reasons for planned route using facts and statistical data obtained from relevant sources and publications
- Undertake routeing according to the General Provisions on Ships' Routeing
- Use chart catalogues, charts, nautical publications and vessel particulars to plan and navigate a passage

### Required Knowledge:

- AMSA Watchkeeping Standards Booklet (including the Manila Amendments)
- Content, application and intent of bridge resource management principles to be observed in keeping a navigational watch
- Content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended
- General Principles for Ship Reporting Systems
- General Provisions on Ships' Routeing
- Method and frequency of checks for errors of magnetic and gyro-compasses to ensure

accuracy of information

- Methods for fixing position of a vessel
- Modern electronic navigational aids, their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction to obtain accurate position fixing
- Operation and care of the main types of gyro-compass
- Principles of magnetic and gyro-compasses
- Problems experienced when fixing vessel position and appropriate action and solutions
- Procedures for filing and maintaining navigational charts, nautical publications and related documentation in serviceable condition
- Procedures for swinging a vessel to determine deviation
- Relevant AMSA Marine Orders
- Requirements for effective passage planning including contingency planning
- Systems under control of the master gyro
- Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks
- VTS procedures
- Vessel reporting systems and their use in planning and conducting a voyage
- Work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, the required skills and knowledge, the range statement and the Assessment Guidelines for the Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

The evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required Knowledge and include:

- planning and navigating a voyage for all conditions including restricted waters, meteorological conditions, ice, restricted visibility, traffic separation schemes, VTS areas and areas of extensive tidal effects
- ensuring currency of relevant legislative and regulatory knowledge
- ensuring currency of relevant reference material.

### **Context of and specific resources for assessment**

Performance is demonstrated consistently over time and in a suitable range of contexts.

Resources for assessment include access to:

- industry-approved marine operations site where managing the navigation of a vessel of 500 gross tonnage or more may be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities
- range of relevant exercises, case studies and/or other simulated practical and knowledge assessments
- appropriate range of relevant operational situations in the workplace.

In both real and simulated environments, access is required to:

- relevant and appropriate materials and equipment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

### **Method of assessment**

Practical assessment must occur in an:

- appropriately simulated workplace environment and/or
- appropriate range of situations in the workplace.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate to this unit:

- direct observation of the candidate managing the navigation of a vessel of 500 gross tonnage
- direct observation of the candidate applying relevant WHS/OHS requirements and work practices.

### **Guidance information for assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

In all cases where practical assessment is used it should be combined with targeted questioning to assess Required Knowledge.

Assessment processes and techniques must be appropriate to the language and literacy requirements of the work being performed and the capacity of the candidate.



## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.

Sources and publications may include:

- AMSA Marine Orders
- Annual and weekly Notices to Mariners
- Nautical almanac
- Navigational chart availability
- Radio signals, light lists, sailing directions, tide tables and chart catalogues
- Safety management system procedures
- Ship reporting systems and requirements
- Ship's routing information

Watchkeeping arrangements must include:

- Clear instruction to watchkeeping officers in the Standing Orders from the Master
- Establishing a proper lookout separate from the helmsman
- Fatigue management strategies
- Hours of work schedule established to ensure correct rest periods are maintained
- Watch hand over procedures

Position determination may include:

- Azimuth mirrors
- Chronometer
- Doppler and electronic logs
- Echo sounders
- ECS and ECDIS systems
- Integrated navigation systems
- Magnetic and gyro compasses and repeaters
- Paper navigational charts
- Radar and other electronic navigation devices
- Sextant

Non-routine problems may include:

- Equipment failure
- Lack of appropriate resources
- Potential collision and emergency situations
- Weather conditions precluding the establishment of vessel position

Complex situations must include:

- Adverse weather
- Areas of extensive tidal effects
- Ice
- Restricted visibility
- Restricted waters

Emergencies may include:

- Traffic separation schemes
- VTS areas
- When summonsed to the bridge by the duty officer
- Engine failure
- Failure of navigational equipment
- Potential close quarter situations

## **Unit Sector(s)**

Not applicable.

## **Competency Field**

Navigation