



Australian Government

MARH5002A Plan and conduct a passage

Release 1

MARH5002A Plan and conduct a passage

Modification History

Release 1

This is the first release of this unit.

Unit Descriptor

This unit involves the skills and knowledge required to plan and conduct a passage and to determine position on a vessel using a range of bridge equipment, and to evaluate meteorological information to inform passage planning.

Application of the Unit

This unit has application for a Watchkeeper Deck and Master < 500 GT.

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 Plan passage | <ul style="list-style-type: none">1.1 <i>Navigational charts, nautical publications and related documentation</i> are selected for the area of navigation and corrected according to the latest information available1.2 Information from charts and publications is interpreted and applied to accurately identify potential <i>navigational hazards</i> relevant to the proposed voyage1.3 State of the tide at specified locations is determined and findings are applied to the passage plan1.4 Route for voyage is determined and critical points along the proposed route of voyage are identified and plotted1.5 Accurate calculations and measurements of navigational information are made1.6 Meteorological information is obtained and interpreted, and weather and sea condition hazards relevant to the proposed voyage are identified prior to departure1.7 Route is modified as required to take into account weather and sea condition hazards1.8 Planned route for voyage is recorded according to organisational and regulatory requirements |
| 2 Conduct passage | <ul style="list-style-type: none">2.1 <i>Mode of steering</i> is selected appropriate for the prevailing weather, sea and traffic conditions and intended manoeuvres2.2 Measurements and observations of sea and weather conditions are used to determine vessel speed and direction2.3 Information from bridge equipment is interpreted to identify navigational hazards and fix vessel position2.4 Alterations to vessel course or speed are made to meet prevailing circumstances and changing <i>conditions</i>2.5 Navigational manoeuvres are conducted within safe operational limits of vessel2.6 Details of passage are recorded in vessel log according to regulations2.7 Variations to planned route are documented prior to archiving on completion of the voyage |

- | | |
|--|---|
| 3 Fix vessel position | <ul style="list-style-type: none">3.1 Primary position fixing method is selected according to prevailing circumstances and conditions3.2 Position is fixed using selected method and information derived from relevant wheelhouse equipment3.3 Position is determined within limits of acceptable instrument/system errors3.4 Position is recorded on a navigational chart according to regulatory requirements3.5 Fixes are taken at time intervals appropriate for prevailing navigational conditions3.6 Reliability of information obtained from primary method of position fixing is checked at appropriate intervals3.7 Performance checks of position fixing instruments and wheelhouse equipment are carried out according to organisational procedures and manufacturer instructions |
| 4 Determine appropriate action to take with respect to plotted position | <ul style="list-style-type: none">4.1 Assessment of the set, drift and leeway being experienced by the vessel is made4.2 Course is adjusted to maintain or resume planned route where the position indicates a deviation has occurred4.3 Dead reckoning (DR) and/or estimated position (EP) is projected along planned route according to the course made good between previously observed positions |
| 5 Analyse navigational system performance | <ul style="list-style-type: none">5.1 Theoretical performance of navigational system is determined5.2 Measurement equipment is selected, and checks and tests are conducted5.3 Data is analysed and theoretical performance is checked with actual performance5.4 Significance of variation between theoretical and actual performance is determined5.5 Appropriate action is taken to bring performance to acceptable instrument/system errors |

Required Skills and Knowledge

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

Required Skills:

- Accurately measure and observe weather conditions
- Accurately prepare calculations and measurements of navigational information
- Adjust steering controls for optimum performance
- Calculate courses using plane, mercator and great circle sailing methods
- Change over from manual to automatic control and vice versa
- Check reliability of information obtained from primary method of position fixing at appropriate intervals
- Correctly interpret and apply meteorological information
- Determine errors in magnetic and gyro compasses, and correctly apply to courses and bearings
- Determine errors of magnetic and gyro compasses using celestial and terrestrial means, and to allow for such errors
- Determine vessel position by use of:
 - landmarks
 - aids to navigation including lighthouses, beacons and buoys
 - rising and dipping distances of lights and the use of horizontal angles
 - dead reckoning, taking into account winds, tides, currents and estimated speed
 - electronic navigational aids
- Determine vessel position within the limits of acceptable instrument/system errors
- Estimate position using dead reckoning
- Interpret nautical charts and publications
- Maintain charts and publications by applying up-to-date corrections to both paper and electronic charts and publications
- Operate echo-sounders and apply the information correctly
- Read the aneroid barometer and interpret the information obtained
- Select mode of steering most suitable for prevailing weather, sea and traffic conditions and intended manoeuvres
- Select most appropriate primary method of fixing vessel position for the prevailing circumstances and conditions
- Use and interpret information obtained from shipborne meteorological instruments
- Use celestial bodies to determine vessel position
- Use chart catalogues, charts, nautical publications, radio navigation warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass
- Use nautical charts and publications
- Use meteorological information available

Required Knowledge:

- Basic meteorological terms
- Characteristics of the various weather systems, reporting procedures and recording systems
- Charted information including that in the Title Block, Zones of Confidence Diagrams and Datums
- Compass error from transit bearings or by bearings taken from a known position
- Determining the times and heights of high and low water from Australian or local tide tables for any port and the relevance of chart datum
- Effects of current and of leeway on the course and speed of the vessel (without calculations)
- Finding the variation from the chart
- Fixing vessel position by:
 - simultaneous bearings, transits of coastal features, and by running fix
 - radar ranges and bearings
- Information given on a chart or plan
- Interpreting the set and drift of the current from information available on the chart
- Measuring distance on a chart
- Meteorological instruments and their use
- Nautical charts and publications
- Plane, Mercator and great circle sailing concepts
- Principles of magnetic and gyro compasses
- Recognising the presence of either or both factors
- Relating coastal features to a chart
- Relationship between compass, magnetic, true and gyro courses and bearings
- Relative bearings
- Selection of suitable points for bearings
- Sources of weather forecasts and the interpretation of that information
- Steering control systems
- Steering control systems operating procedures
- Tropical revolving storms and weather associated with such storms
- Use and limitations on the use of electronic position fixing equipment found on small vessels
- Use of a deviation card without mathematical interpolation
- Using a single position line to assist in clearing dangers
- Using modern electronic navigational aids to determine vessel position
- Using soundings in determining position
- Using terrestrial observations to determine vessel position individually or in combination with other methods
- 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:

- producing accurate and reliable information
- ensuring currency of relevant legislative and regulatory knowledge.

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 planning and conducting a passage 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 planning and conducting a passage
- direct observation of the candidate applying relevant

Guidance information for assessment

WHS/OHS requirements and work practices.

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.

Navigational charts, nautical publications and related documentation may include:

- Electronic chart display systems
- Nautical Almanac
- Nautical tables
- Notices to Mariners
- Paper charts
- Radio navigational warnings
- Sailing directions
- Temporary warning notices
- Tide tables
- Vessel routing information
- Weather reports and warnings

Navigational hazards may include:

- Restricted visibility
- Shallow ground
- Traffic
- Unlit beacons

Mode of steering may include:

- Automatic pilot
- Electric systems
- Hydraulic systems

Conditions may include:

- Buoyage
- Overall passage plan requirements
- Prevailing weather and sea conditions
- Proximity and course of other vessels
- Relevant navigational hazards
- Signage

Primary position fixing method may include:

- Celestial observations
- Radar ranges or bearings
- Radio navigation aids
- Running fix
- Simultaneous bearings or transits of coastal features
- Soundings to determine position
- Terrestrial observations

Unit Sector(s)

Not applicable.

Competency Field

Navigation