



Australian Government

MARH008 Plan and conduct a passage

Release: 1

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Modification History

Not applicable.

Application

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.

This unit applies to a Watchkeeper Deck, a Master up to 500 gross tonnage or a Master up to 80 metres Near Coastal.

This unit has links to legislative and certification requirements.

Pre-requisite Unit

Not applicable.

Competency Field

H – Navigation

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 Plan passage

- 1.1 Navigational charts, nautical publications and related documentation are selected for the area of navigation and corrected according to the latest information available
- 1.2 Information from charts and publications is interpreted and applied to accurately identify potential navigational hazards relevant to the proposed voyage
- 1.3 State of the tide at specified locations is determined and findings are applied to the passage plan
- 1.4 Route for voyage is determined and critical points along the proposed route of voyage are identified and plotted

- 1.5 Accurate calculations and measurements of navigational information are made
- 1.6 Meteorological information is obtained and interpreted, and weather and sea condition hazards relevant to the proposed voyage are identified prior to departure
- 1.7 Route is modified as required to take into account weather and sea condition hazards
- 1.8 Planned route for voyage is recorded according to organisational and regulatory requirements
- 2 Conduct passage**
 - 2.1 Mode of steering is selected appropriate for the prevailing weather, sea and traffic conditions and intended manoeuvres
 - 2.2 Measurements and observations of sea and weather conditions are used to determine vessel speed and direction
 - 2.3 Information from bridge equipment is interpreted to identify navigational hazards and fix vessel position
 - 2.4 Alterations to vessel course or speed are made to meet prevailing circumstances and changing conditions
 - 2.5 Navigational manoeuvres are conducted within safe operational limits of vessel
 - 2.6 Details of passage are recorded in vessel log according to regulations
 - 2.7 Variations to planned route are documented prior to archiving on completion of the voyage
- 3 Fix vessel position**
 - 3.1 Primary position fixing method is selected according to prevailing circumstances and conditions
 - 3.2 Position is fixed using selected method and information derived from relevant wheelhouse equipment
 - 3.3 Position is determined within limits of acceptable instrument/system errors
 - 3.4 Position is recorded on a navigational chart according to regulatory requirements
 - 3.5 Fixes are taken at time intervals appropriate for prevailing navigational conditions

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| | 3.6 | Reliability of information obtained from primary method of position fixing is checked at appropriate intervals |
| | 3.7 | 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 | 4.1 | Assessment of the set, drift and leeway being experienced by the vessel is made |
| | 4.2 | Course is adjusted to maintain or resume planned route where the position indicates a deviation has occurred |
| | 4.3 | 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 | 5.1 | Theoretical performance of navigational system is determined |
| | 5.2 | Measurement equipment is selected, and checks and tests are conducted |
| | 5.3 | Data is analysed and theoretical performance is checked with actual performance |
| | 5.4 | Significance of variation between theoretical and actual performance is determined |
| | 5.5 | Appropriate action is taken to bring performance to acceptable instrument/system errors |

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.

Navigational charts, nautical publications and related documentation include one or more of the following:

- electronic chart display systems
- Nautical Almanac
- nautical tables
- Notices to Mariners
- paper charts
- radio navigational warnings
- sailing directions
- temporary warning notices
- tide tables
- vessel routeing information
- weather reports and warnings

Navigational hazards include one or more of the following:

- restricted visibility
- shallow ground
- traffic
- unlit beacons

Mode of steering includes one or more of the following:

- automatic pilot
- electric systems
- hydraulic systems

Conditions include one or more of the following:

- buoyage
- overall passage plan requirements
- prevailing weather and sea conditions
- proximity and course of other vessels
- relevant navigational hazards
- signage

Primary position fixing method includes one or more of the following:

- 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 Mapping Information

This is a new unit. This unit is equivalent to MARH5002A Plan and conduct a passage.

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MARH008 Plan and conduct a passage

Modification History

Not applicable.

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:

- accurately measuring and observing weather conditions
- accurately preparing calculations and measurements of navigational information
- adjusting steering controls for optimum performance
- calculating courses using plane, mercator and great circle sailing methods
- changing over from manual to automatic control and vice versa
- checking reliability of information obtained from primary method of position fixing at appropriate intervals
- correctly interpreting and applying meteorological information
- determining errors in magnetic and gyro compasses, and correctly applying to courses and bearings
- determining errors of magnetic and gyro compasses using celestial and terrestrial means, and allowing for such errors
- determining 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
- determining vessel position within the limits of acceptable instrument/system errors
- estimating position using dead reckoning
- interpreting nautical charts and publications
- maintaining charts and publications by applying up-to-date corrections to both paper and electronic charts and publications
- operating echo-sounders and applying the information correctly
- producing accurate and reliable information
- reading the aneroid barometer and interpreting the information obtained
- selecting mode of steering most suitable for prevailing weather, sea and traffic conditions and intended manoeuvres
- selecting most appropriate primary method of fixing vessel position for the prevailing circumstances and conditions
- using and interpreting information obtained from shipborne meteorological instruments

- using celestial bodies to determine vessel position
- using chart catalogues, charts, nautical publications, radio navigation warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass
- using nautical charts and publications
- using meteorological information available.

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:

- 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.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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.

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

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