



Australian Government

MARH004 Plan and navigate a passage for a vessel up to 80 metres

Release: 2

MARH004 Plan and navigate a passage for a vessel up to 80 metres

Modification History

Release 1. New unit of competency.

Release 2. Additional information re procedures to determine compass accuracy included in Knowledge Evidence.

Application

This unit involves the skills and knowledge required to plan and safely navigate a vessel up to 80 metres using a range of wheelhouse equipment and to interpret available meteorological information to inform passage planning and navigation.

This unit applies to people working in the maritime industry on a range of vessels up to 80 metres.

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 accessed and checked for currency
- 1.2 Documentation is used to identify navigational hazards relevant to proposed voyage
- 1.3 Route for voyage is determined and critical points along proposed route of voyage are identified and plotted
- 1.4 Potential navigational contingencies and problems along

- planned route are identified and appropriate strategies for dealing with them are developed and recorded
- 1.5 Weather forecasts are obtained and interpreted, and weather and sea condition hazards relevant to proposed voyage are identified prior to departure
 - 1.6 Route is modified as required to take into account weather and sea condition hazards
 - 1.7 Planned route for voyage and strategies for dealing with critical situations and contingencies along route are recorded
- 2 Conduct a pre-departure check**
- 2.1 Propulsion steering equipment and alarms are tested for serviceability and vessel hull is checked for seaworthiness
 - 2.2 Wheelhouse equipment and alarms are checked to ensure they are in proper working condition and set for passage
 - 2.3 Wheelhouse equipment is checked for errors and allowances are made in planning passage
 - 2.4 Fuel is checked to ensure that there is adequate fuel, including a reserve, on board for the intended passage
 - 2.5 Safety equipment is checked for compliance with relevant legislation
 - 2.6 Communications equipment is checked to ensure it is in proper working condition
 - 2.7 Anchoring and mooring equipment is checked to ensure it is in proper working condition
 - 2.8 Vessel and equipment are secured for sea
 - 2.9 Latest weather information is obtained and interpreted, and proposed route is modified as required to take into account weather and sea condition hazards
- 3 Conduct passage**
- 3.1 Local authorities are advised of departure and passage plan
 - 3.2 Mode of steering is selected appropriate for prevailing weather, sea and traffic conditions, and intended manoeuvres
 - 3.3 Weather forecasts and observations of sea and weather conditions are used to determine vessel speed and direction
 - 3.4 Information from wheelhouse equipment is interpreted to identify navigational hazards and fix vessel position

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| | 3.5 | Alterations to vessel course or speed are made to meet prevailing circumstances and changing conditions |
| | 3.6 | Navigational manoeuvres are conducted within safe operational limits of vessel |
| | 3.7 | Details of passage are recorded in vessel log according to regulations |
| 4 | Fix vessel position | |
| | 4.1 | Primary position fixing method is selected according to navigational principles and prevailing conditions |
| | 4.2 | Position is fixed using selected method and information derived from relevant wheelhouse equipment |
| | 4.3 | Position is recorded according to regulations |
| | 4.4 | Fixes are taken at time intervals appropriate for prevailing navigational conditions |
| | 4.5 | Performance checks of position fixing instruments and wheelhouse equipment are carried out according to organisational procedures and manufacturer instructions |

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.

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| Navigational charts, nautical publications and related documentation include one or more of the following: | <ul style="list-style-type: none"> • electronic chart display and information systems (ECDISs) • Notice to Mariners |
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- paper charts
- temporary warning notices
- tide tables
- weather reports and warnings

Navigational hazards include one or more of the following:

- ice
- restricted visibility
- shoals and reefs
- traffic
- unlit beacons

Weather includes one or more of the following:

- air masses and fronts
- cloud classifications
- cyclones, storms and gales
- effects of weather on predicted tidal information
- heat exchange process
- ocean currents
- pressure systems, cold and warm fronts
- sea state
- synoptic chart analysis
- tropical meteorology
- vertical division of atmosphere
- weather data provided by shipboard instruments

Propulsion steering equipment and alarms include one or more of the following:

- engine alarms
- inboard engines, petrol and diesel
- jet propulsion
- off-course alarms
- outboard engines, petrol and diesel
- radar range alarms

Wheelhouse equipment includes one or more of the following:

- alarm devices including off-course and watch alarms
- automatic identification system (AIS)
- automatic pilot
- azimuth mirrors

- bilge alarms
- coverage areas
- depth alarms
- differential global positioning system (DGPS)
- echo sounder
- electronic charts
- global positioning system (GPS)
- hyperbolic systems
- magnetic and gyro compasses
- plotters
- radar
- satellite technology
- speed and distance log

Safety equipment must include:

- distress flares/pyrotechnics
- electronic position indicating radio beacon (EPIRB)
- firefighting equipment
- life jackets
- life rafts and hydrostatic release systems
- search and rescue transponder (SART)

Communications equipment includes one or more of the following:

- HF radio
- VHF radio

Anchoring and mooring equipment includes one or more of the following:

- anchor
- mooring lines
- sea anchors

Passage plan must include:

- anticipated weather conditions
- completed Australian Ship Reporting System (AUSREP) reports as applicable
- courses to steer or knowledge of navigation markers during passage
- depths of water throughout passage
- estimated time of arrival (ETA) at

destination

- tidal information

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 include one or more of the following:

- radar ranges or bearings
- running fix
- simultaneous bearings or transits of coastal features
- use of electronic navigational systems
- use of soundings to assist in determining position

Unit Mapping Information

This unit is equivalent to MARH3003A Plan and navigate a passage for a vessel up to 80 metres.

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 MARH004 Plan and navigate a passage for a vessel up to 80 metres

Modification History

Release 1. New unit of competency.

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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 hazard avoidance techniques in passage planning
- applying variation and deviation to compass courses
- completing required records relevant to planning and navigating a passage
- developing effective planning documents
- determining dipping and rising distances of lights
- estimating position using dead reckoning
- interpreting and applying tidal stream data
- lay off a safe course on a chart
- maintaining situational awareness
- observing and interpreting weather and oceanographic conditions
- producing accurate and reliable documentation
- reading and interpreting:
 - charts and other published information relevant to planning and navigating a passage
 - instrument and equipment readings relevant to planning and navigating a passage
 - weather information and oceanographic reports
- reading aneroid barometer and interpreting information obtained
- recognising and correctly responding to cross-track error resulting from effects of tide and wind
- recognising faulty equipment and taking appropriate action according to operating instructions
- recognising problems that may be experienced when planning and navigating a passage
- selecting and using relevant equipment required for planning and navigating a passage
- using parallel indexing to maintain a required distance of a point of land
- using meteorological information available.
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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:

- Australian or local tide tables and sailing directions
- basic meteorological terms
- characteristics of various weather systems affecting Australian coast
- charted information including that in the title block, Zone Of Confidence diagrams and datums
- procedures to determine compass accuracy:
 - from transit bearings or by bearings taken from a known position
 - by azimuth, amplitude or other method appropriate to the standards of watchkeeping practice when beyond sight of land
- determining times and heights of:
 - high and low water from Australian or local tide tables for any port and the relevance of chart datum
 - tides at standard and secondary ports for any state of tide
- rhumb lines, plane and great circle sailings
- effects of current and of leeway on course and speed of vessel (without calculations) and recognising the presence of either or both factors
- finding variation from 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, particularly buoyage, hazards to navigation, depth and nature of bottom, lights, tides and tidal streams
- interpreting set and drift of current from information available on chart
- measuring distance on a chart
- meteorological instruments and their use
- obtaining bearings on small vessels
- recognition of coastal features
- relating coastal features to a chart
- relationship between:
 - latitude and longitude
 - compass, magnetic, true and gyro courses and bearings
- relative bearings
- selection of suitable:
 - anchorage or shelter
 - points for bearings
- sound signals such as:
 - appropriate signals for alteration of course to port or starboard
 - danger warnings

- moving astern
- sources of weather forecasts and interpretation of that information in simple terms
- traffic separation schemes
- tropical revolving storms and the weather associated with such storms
- use and application of ship routing services
- use and limitations on use of electronic position fixing equipment found on small vessels
- use of a deviation card without mathematical interpolation
- using a single position line
- using modern electronic navigational aids to determine vessel position
- using rhumb line navigation
- using soundings in determining position
- using terrestrial observations to determine vessel position individually or in combination with other methods
- weather conditions affecting Australian coast and liable to endanger vessel
- 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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