Australian Government

MARH3003A Plan and navigate a passage for a vessel up to 80 metres

Release 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MARH3003A Plan and navigate a passage for a vessel up to 80 metres

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 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.

Application of the Unit

This unit applies to those working in the capacity of Master on a range of vessels up to 80 metres.

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.

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Elements and Performance Criteria

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

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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
	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

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Required Skills and Knowledge

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

Required Skills:

- Complete required records relevant to planning and navigating a passage
- Determine dipping and rising distances of lights
- Estimate position using dead reckoning
- Interpret tidal stream data
- Lay off a safe course on a chart
- Observe and interpret weather and oceanographic conditions
- Read and interpret:
  - 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
- Read aneroid barometer and interpret information obtained
- Recognise and correctly respond to cross-track error resulting from effects of tide and wind
- Recognise faulty equipment and take appropriate action according to operating instructions
- Recognise problems that may be experienced when planning and navigating a passage
- Select and use relevant equipment required for planning and navigating a passage
- Use meteorological information available

Required Knowledge:

- 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, Zones of Confidence Diagrams and Datums
- Compass error from transit bearings or by bearings taken from a known position
- 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
- Differences between rhumb 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

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- 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
- Tropical revolving storms and the weather associated with such storms
- 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

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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:

- developing effective planning documents
- producing accurate and reliable documentation.

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:

- marine operations site or an approved marine simulator where planning and navigating a passage for a vessel up to 80 metres can 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 navigating a passage for a vessel up to 80 metres
- direct observation of 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.

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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.

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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 • Notice to Mariners • Paper charts • Temporary warning notices • Tide tables • Weather reports and warnings
Navigational hazards may include:	• Restricted visibility • Shallow ground • Traffic • Unlit beacons
Weather must include:	• 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 may include:	• Bilge alarms • Depth alarms • Engine alarms • Inboard engines, petrol and diesel • Jet propulsion • Off-course alarms • Outboard engines, petrol and diesel • Radar range alarms
Wheelhouse equipment may include:	• Alarm devices including off-course and watch alarms • Automatic pilot • Azimuth mirrors • Bottom logs

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	• Coverage areas • DGPS • Echo sounder • Electronic charts • GPS • Hyperbolic systems • Magnetic and gyro compasses • Plotters • Radar • Satellite technology
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 may include:	• HF radio • VHF radio
Anchoring and mooring equipment may include:	• Anchor • Mooring lines • Sea anchors
Passage plan must include:	• Anticipated weather conditions • Completed 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 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:	• Radar ranges or bearings • Running fix

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- Simultaneous bearings or transits of coastal features
- Soundings to determine position

Unit Sector(s)

Not applicable.

Competency Field

Navigation

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