

Higher National Unit Specification

General information for centres

Unit title: Marine Passage Planning

Unit code: F0LG 35

Unit purpose: This Unit introduces the candidate to the principles involved in planning a voyage and conducting navigation and involves appraising the intended passage, preparing and documenting the passage and making contingency plans for emergency situations. It also covers evaluating the completed plan and accurately evaluating, plotting and recording necessary alterations to the plan. It is primarily aimed at candidates who intend to seek sea-going employment as a Merchant Navy Deck Officer. However, it could also be studied by someone with an interest in the subject area.

On completion of this Unit the candidate should be able to:

- 1 Appraise the intended passage.
- 2 Prepare and document a passage plan.
- 3 Evaluate the completed passage plan.
- 4 Implement and execute appropriate solutions for situations which arise during a passage.

Credit points and level: 1.5 HN Credits at SCQF level 8: (12 SCQF credit points at SCQF level 8*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Recommended prior knowledge and skills: Access to this Unit is at the discretion of the centre. However candidates would benefit most from this Unit if they have successfully completed the following HN Units F0LV 34 *Chartwork and Tides*, F0LS 35 *Celestial Navigation*, F0M0 34 *Navigational Mathematics and Science*, F0LK 34 *Marine Emergency Response and Communication* associated with the HNC/D Nautical Science.

Core Skills: The achievement of this Unit gives automatic certification of the following:

Numeracy at SCQF level 6

There are also further opportunities to develop the Core Skills of:

Communication: Written at SCQF level 6

Communication : Reading at SCQF level 6

Using Information Technology at SCQF level 6

Problem Solving: Critical Thinking at SCQF level 6

Problem Solving: Planning and Organisation at SCQF level 6

Problem Solving: Reviewing and Evaluating at SCQF level 6

General information for centres (cont)

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Assessment: It is recommended that Outcomes 1, 2 and 3 be combined for assessment purposes and should cover the following:

- ◆ a coastal passage plan
- ◆ an ocean passage plan

Assessments may be in the form of an open-book assessment under supervised conditions, however assessments involving tidal calculations should be closed-book under supervised conditions.

Higher National Unit specification: statement of standards

Unit title: Marine Passage Planning

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Appraise the intended passage

Knowledge and/or skills

- ◆ Principles of Passage Planning
- ◆ Passage Planning legislation
- ◆ Charts and Publications
- ◆ Sailings, great Circle sailings and Tidal Calculations
- ◆ Availability of Navigational Aids
- ◆ Ship Reporting and Weather routing
- ◆ Landfall and confined water procedures

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- (a) Analyse and evaluate current legislation with regard to Passage and Voyage Planning.
- (b) Utilise the principles of passage planning to make a complete appraisal of a proposed passage.
- (c) Analyse and evaluate the use of Gnomonic Charts, Admiralty Routing charts and Ocean Passages of the World (OPOW) to appraise a proposed ocean passage.
- (d) Utilise Navigational Charts, Admiralty Sailing Directions, Tide tables and other relevant publications to appraise a coastal/pilotage passage.
- (e) Analyse and evaluate the availability, reliability, accuracy and coverage of navigational aids on a proposed passage.
- (f) Analyse and evaluate the availability and use of ship reporting and weather routing advice for a proposed passage.
- (g) Appraise a passage for landfall positions and areas of confined water.

Assessment guidelines

See Outcome 4

Higher National Unit specification: statement of standards (cont)

Unit title: Marine Passage Planning

Outcome 2

Prepare and document a passage plan

Knowledge and/or skills

- ◆ Great Circle, Composite Great Circle and Rhumb line routes
- ◆ Distance and courses on Great Circle, Composite Great Circle and Rhumb line route
- ◆ Tidal heights, times and streams to ensure the passage is made safely
- ◆ Co-tidal Co-range Charts
- ◆ Landfall and Port Approaches
- ◆ No Go Areas and navigational hazards
- ◆ Accuracy of position fixing
- ◆ Wheel over positions
- ◆ Document the passage plan

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- (a) Select appropriate Great Circle, Composite Great Circle and Rhumb line routes from information provided from OPOW extracts, Admiralty Routeing charts and Gnomonic charts.
- (b) Calculate the courses and distance on passage for any of the routes mentioned above.
- (c) Utilise Mercator and Gnomonic charts to plan routes on trans-oceanic passages.
- (d) Calculate the height of tide at a given time, the time the tide will be at a certain height and determine tidal stream information for any part of the world, using Admiralty Tide tables / tidal stream information.
- (e) Use Co-tidal/Co Range charts to determine the height of tide at a position offshore.
- (f) Plan appropriate strategies and contingency plans to deal with the following:
 - (i) Making landfall
 - (ii) Approaching a port/anchorage
 - (iii) No go areas and navigational hazards
 - (iv) Position fixing accuracy in critical areas
 - (v) Areas where turning and manoeuvring are critical
- (g) Prepare a fully documented coastal passage plan as per the requirements of International Maritime Organisation resolution A.893.

Assessment guidelines

See Outcome 4

Higher National Unit specification: statement of standards (cont)

Unit title: Marine Passage Planning

Outcome 3

Evaluate the completed passage plan

Knowledge and/or skills

- ◆ Factors affecting the execution of the passage plan including:
 - Tidal Considerations for underkeel clearance
 - Traffic considerations
 - Navigational accuracy
 - Meteorological conditions
 - Condition of the vessel
 - Vessel traffic systems and reporting schemes
 - Monitoring the passage plan

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- (a) Analyse and evaluate the factors which will affect the execution of the plan with particular reference to the following:
 - (i) Condition of navigational equipment and vessel systems
 - (ii) Tidal considerations with respect to underkeel clearance
 - (iii) Expected traffic density
 - (iv) Availability and type of navigational aids
 - (v) Expected meteorological conditions
 - (vi) Ship reporting requirements
 - (vii) Reliability of celestial and terrestrial position fixing and associated errors
- (b) Analyse and evaluate how the proposed plan can be monitored effectively to ensure that the vessel is not being put in danger.

Assessment guidelines

See Outcome 4

Higher National Unit specification: statement of standards (cont)

Unit title: Marine Passage Planning

Outcome 4

Implement and execute appropriate solutions for situations which arise during a passage

Knowledge and/or skills

- ◆ Contingency plans for critical navigational areas
- ◆ Adjustments to the passage plan for routine changes
- ◆ Adjustments required to the plan for adverse environmental conditions
- ◆ Adjustments required to the plan to comply with Search and Rescue (SAR) or medical emergencies

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- (a) Implement and execute contingency plans to deal with emergency situations in areas critical to navigation from a sample of two of the following:
 - (i) Steering gear failure
 - (ii) Engine failure
 - (iii) Extreme weather conditions
 - (iv) Malfunction of navigational equipment
- (b) Select routes to take account of possible emergencies.
- (c) Determine safe water areas and emergency anchoring positions.
- (d) Indicate areas where actions taken to maximise searoom may be required.
- (e) Implement and execute adjustments to the proposed plan to take account of a sample of two of the following:
 - (i) adverse weather conditions
 - (ii) requirements of ship's weather routing services
 - (iii) avoidance of tropical revolving storms
 - (iv) navigating in areas of ice or with ice suspected within the vicinity
 - (v) ice accumulation on board the vessel
- (f) Determine the optimum course and speed to make a rendezvous with another vessel in case of SAR or medical emergencies.
- (g) Evaluate the reliability of celestial observations and determine the Most Probable Position (MPP) from a series of three or more celestial observations.

Where sampling is used a different sample must be used on each assessment occasion

Higher National Unit specification: statement of standards (cont)

Unit title: Marine Passage Planning

Assessment guidelines

It is recommended that this Unit is assessed using the following method.

An open-book assessment under supervised conditions covering the preparation of a coastal passage plan, designed so that the relevant Evidence Requirements are fully covered.

An open-book assessment under supervised conditions covering the appraisal, selection and distance calculations for routes on an ocean passage.

A closed-book assessment under supervised conditions covering any elements not mentioned above.

Administrative Information

Unit code: F0LG 35
Unit title: Marine Passage Planning
Superclass category: ZF
Original date of publication: August 2006
Version: 02 (June 2007)

History of Changes:

Version	Description of change	Date
02	Core Skills Section Updated	June 2007

Source: SQA

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Higher National Unit specification: support notes

Unit title: Marine Passage Planning

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 60 hours.

Guidance on the content and context for this Unit

The content of this Unit forms part of the underpinning knowledge for a UK MCA *Chief Mate Certificate of Competency* and accordingly reflects the content of International Maritime Organisation's *Standards of Training Certification and Watchkeeping (STCW)*.

The knowledge and skills contained within the Unit cover all the requirements as laid down by the Standards for Training and Certification of Watchkeepers (STCW 95) at management level aboard ship.

Completion of the Unit will also ensure that the candidate complies with all the requirements laid down by the UK Maritime and Coastguard Agency (MCA) for the issue of a Chief Mate Unlimited Certificate of Competency as a Deck Officer. The required knowledge and skills for MCA certification can be found in a document detailing the requirements for the issue of an Education and Training Certificate (C&D), which is available from the MNTB.

The following notes give additional information on the knowledge and skills for each of the four Outcomes.

Outcome 1

In this Outcome candidates will be introduced to the principles of passage planning and the current legislation, both national and international concerning the legal requirements for vessels to have a comprehensive passage plan prior to sailing.

The four components of Appraisal, Planning, Execution and Monitoring will be discussed in detail and this Outcome deals mainly with the process of appraisal of all the relevant information available to the mariner in order that the most comprehensive plan possible can be made.

The process of appraisal and the sources of information that are available will be considered. The use of publications, charts, routing and gnomonic charts will be investigated and demonstrated. The factors to be taken into account, when making an appraisal, will be examined and those which are of prime importance discussed.

Higher National Unit specification: support notes (cont)

Unit title: Marine Passage Planning

Outcome 2

This Outcome deals with the actual process of preparing and documenting a passage plan. Candidates will be shown how to use charts and publications to plan coastal and ocean passages based on the information obtained from the appraisal process and complying with all current navigational regulations and the ordinary practice of seamen. The use of great circle, composite great circle and rhumb line navigation will be examined and the criteria used for selection of the most appropriate route discussed.

The use of charted no go areas and requirements for underkeel clearance and navigational aids will be considered plus regulations concerning the safety of navigation in traffic separation schemes and port approaches will be covered in detail. The effect of tidal streams will be considered.

Outcome 3

This Outcome deals with the factors affecting the actual execution of the proposed plan. Whilst Outcome 2 deals with the mechanics of planning a passage, the problems of executing the plan are now considered.

Factors such as meteorological conditions, eg reduced visibility, wind etc, traffic density, availability and type of navigational aids in critical areas.

The Outcome also considers the means of monitoring how the proposed plan is progressing. This will entail looking at systems for continuous monitoring of the vessel's progress along the intended track.

Outcome 4

This Outcome deals with the procedures to be adopted when adjustments to the passage plan are required when the vessel is en route.

Routine and emergency situations will be considered including failure of critical equipment and the onset of adverse weather or environmental conditions. The responsibility and planning procedures to be adopted in SAR situations will be discussed and methods of planning and executing SAR operations considered.

Opportunities for developing Core Skills

The achievement of this Unit gives automatic certification of the following:

Numeracy at SCQF level 6

Communication: Written at SCQF level 6 can be developed by candidates in assessments and in preparing a clear and fully comprehensive passage plan.

Communication: Reading can be developed at SCQF level 6 as candidates will have to read, interpret and apply written information from charts, and Admiralty and other publications.

Higher National Unit specification: support notes (cont)

Unit title: Marine Passage Planning

Using Information Technology at SCQF level 6 may be developed by candidates accessing internet resources to obtain information regarding tidal problems and also sailing calculations.

Problem Solving across all three components can be developed at SCQF level 6 as candidates go through the process of appraising and organising information, determining which of the latter is critical to the passage and then having to review and adjust the proposed plan to take account of unforeseen factors.

Open learning

This Unit is not suited to delivery by distance learning because it requires candidates to be observed and questioned by a qualified practitioner to meet Statutory/professional body requirements.

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).

General information for candidates

Unit title: Marine Passage Planning

This Unit is designed to enable you to appraise, plan, execute and monitor a passage in either ocean, coastal or confined waters. It will cover the processes that are required to ensure that the vessel will at all times remain in safe water whilst complying with all regulations concerning the safety of navigation.

It details the various factors that must be taken into account when considering whether the proposed plan requires adjustments and covers those situations where a change to the plan is unavoidable.

You will be required to prepare a fully documented coastal and ocean passage plan given an initial scenario. This will involve appraising extracts from both Admiralty Sailing Directions and Ocean Passages of the World, Admiralty Tide Tables and the Admiralty List of Radio Signals.

You will then have to take the information obtained from the appraisal and plan on one or more charts a viable passage plan between a start and end position. This will involve a coastal section plus a pilotage section and will involve you having to consider all the factors which affect the safety of the vessel.

You will also be expected to make a record of the plan, in an acceptable format, such that it could be used by any navigating officer to execute your proposed plan.

You will look at how emergency situations can be accommodated within a passage plan and what strategies are required to deal with these. Successful completion of this Unit will enable you to meet the requirements of the Maritime and Coastguard Agency's Chief Mate Unlimited Certificate of Competency.

On completion of the Unit you will be able to:

- 1 Appraise the intended passage.
- 2 Prepare and document a passage plan.
- 3 Evaluate the completed passage plan.
- 4 Implement and execute appropriate solutions for situations which arise during a passage.

You may be assessed using two assessment methods. One assessment may be completed under open-book conditions and the second under closed-book conditions involving total calculations.