

Higher National Unit Specification

General information for centres

Unit title: Chartwork

Unit code: D77S 34

Unit purpose: This Unit is about using, caring for and the correction of charts and publications carried aboard ship. It is also about position fixing using charted objects, determining the compass course to steer and counteracting tidal stream and leeway to make passage plan way points by measurement from the chart. 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. Explain the procedures necessary to ensure that all charts and publications are maintained and corrected
2. Use Mercator charts for visual position fixing methods
3. Use chartwork techniques to find the adjustments to a vessel's course to take account of passage plan requirements

Credit value: 1.5 HN Credits at SCQF level 7: (12 SCQF credit points at SCQF level 7)

SCQF (the Scottish Credit and Qualifications Framework) brings Scottish qualifications into a single framework of 12 levels ranging from SQA Access 1 to doctorates. The SCQF includes degrees; HNC/Ds; SQA National Qualifications; and SVQs. Each SQA Unit is allocated a number of SCQF credit points at a specific level. 1 SCQF point = 10 hours of learning. HN candidates are normally expected to input a further number of hours, matched to the credit value of the Unit, of non-contact time or candidate-led effort to consolidate and reinforce learning.

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 *Marine Induction Course* associated with the HNC/D *Nautical Science*.

Core skills: There may be opportunities to gather evidence towards core skills in this Unit, although there is no automatic certification of core skills or core skills components.

Context for delivery: This Unit is included in the framework of the HNC/D *Nautical Science*. It is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

General information for centres (cont)

Assessment: Assessment will be on a sample basis with Outcome 1 being assessed either orally or by an assignment. Outcomes 2 and 3 can be combined for assessment purposes and assessed by a combination of chartwork exercises and written questions under supervised conditions.

Higher National Unit specification: statement of standards

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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

Explain the procedures necessary to ensure that all charts and publications are maintained and corrected.

Knowledge and/or skills

- Identifying charts and publications required to be carried aboard ship and indicate the information they contain, to include:
 - (a) Navigation and routing charts, Sailing Directions and Chart Catalogue
 - (b) *Notices to Mariners: Annual Summary*, Weekly Notices, Cumulative list of *Notices to Mariners*
 - (c) *Nautical Almanac*, Tide Tables, Tidal Stream Atlases, Distance Tables
 - (d) *Admiralty List of Lights*, *Admiralty List of Radio Signals*
 - (e) *Ocean Passages for the World*, *IMO Ships Routing*
 - (f) *Guide to Port Entry* and similar commercial publications

- Use and care of chart folio systems.
 - (a) The handling and storage of charts and publications and the precautions taken to prolong life of charts
 - (b) Sequencing of charts for a passage
 - (c) Procedures for ordering new editions and publications, automatic ordering systems

Higher National Unit specification: statement of standards (cont)

- Make the necessary corrections to update charts and publications including ECDIS using:
 - (a) Correction logs for charts and publications
 - (b) Chart catalogue, weekly and cumulative lists of *Admiralty Notices to Mariners*
 - (c) *Weekly Notices to Mariners* and Commercial systems to correct, record and cross reference:
 - (i) Navigational charts, Last correction checks
 - (ii) *Admiralty List of Radio Signals*
 - (iii) *Admiralty List of Lights*
 - (iv) *Admiralty Sailing Directions*
 - (v) Temporary and preliminary notices
 - (vi) Navigation warnings, Navigation areas, Hydrolants and Hydropacs
 - (vii) Radio Navigational warnings

Evidence requirements

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

- correctly identify the charts and publications required to be carried aboard ship and indicate the information they contain
- accurately make the necessary corrections to charts and a sample of publications.

Assessment guidelines

Outcome 1 will be assessed on a sample basis either orally or by an assignment on the correction of charts and the content of a randomly selected sample of the publications carried on board ship.

Outcome 2

Use Mercator charts for visual position fixing methods

Knowledge and/or skills

- Use of mercator charts including:
 - (a) Navigational properties of the Mercator chart
 - (b) Natural scale, distance measurement and chart co-ordinates
 - (c) Plotting a position on the chart by:
 - (i) Latitude and longitude
 - (ii) Bearing and range
 - (d) The meaning of chart symbols and abbreviations

Higher National Unit specification: statement of standards (cont)

- Visual methods of position fixing using charted objects including:
 - (a) Use of navigation drawing instruments, parallel rulers, dividers and compasses
 - (b) The identification of suitable charted objects
 - (c) Conversion of compass or gyro courses to true
 - (d) Calculation of compass error and deviation by means of transit
 - (e) Determination of variation and deviation using charts, curves and tables
 - (f) The taking of, and use of, cross bearings and transits to fix a position
 - (g) Reliability of fixes and the cocked hat
 - (h) Single position lines and the running fix
 - (i) Soundings to verify position
 - (j) The calculation of the distance at which lights should be sighted and the use of range diagrams
 - (k) Plotting DR and EP by measurements on the chart from course steered, log distance, log speed and time allowing for leeway and estimated set and drift
 - (l) Water and ground tracks

Evidence requirements

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

- apply visual position fixing methods to find the vessel's position
- find the compass error by transit and convert compass and gyro courses and bearings to true
- plot DR, EP and determine water and ground tracks

Assessment guidelines

Outcome 2 will be assessed on a sample basis by a practical chartwork exercise under supervised conditions sampling visual position fixing methods and chartwork techniques. It is recommended that Outcomes 2 and 3 be combined for assessment purposes.

Higher National Unit specification: statement of standards

Unit title: Chartwork

Outcome 3

Use chartwork techniques to find the adjustments to a vessel's course to take account of passage plan requirements.

Knowledge and/or skills

- The fundamental principles of passage planning including:
 - (a) stages in making a passage plan
 - (b) following a passage plan
 - (c) making a landfall

- Use published routeing instructions and guidelines including:
 - (a) *IMO Ships Routeing Guide*
 - (b) *International regulations for Preventing collisions at Sea (Rule 10)*
 - (c) *Admiralty Chart 5500 Mariners Routeing Guide*

- Make adjustments to the vessel's course and speed to take account of the passage plan requirements including:
 - (a) adjustments for changes in compass error
 - (b) finding the compass course to steer to counteract a current/tidal stream and or leeway
 - (c) finding the compass course to steer and the ETA to make a passage plan way point by measurement from the chart

Evidence requirements

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

- correctly explain the fundamental principles of passage planning and use of published routeing instructions and guidelines
- accurately find the compass course to steer and the ETA to make a passage plan way point by measurement from the chart
- accurately find the compass course to steer to counteract a current/tidal stream and or leeway.

Assessment guidelines

Outcome 3 will be assessed on a sample basis by written questions under supervised conditions on the fundamental principles of passage planning and a practical chartwork exercise sampling chartwork techniques to find required course adjustments. It is recommended that this Outcome be combined with Outcome 2 for assessment purposes.

Administrative Information

Unit code: D77S 34

Unit title: Chartwork

Superclass category: ZF

Date of publication: August 2001

Source: SQA

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Higher National Unit specification: support notes

Unit title: Chartwork

This part of the Unit 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 the Level 3 SVQ *Marine Vessel Operations* and reflects the content of International Maritime Organisation's *Standards of Training Certification and Watchkeeping (STCW)*.

Guidance on the delivery of this Unit

This Unit should be delivered in conjunction with the unit D77T 34 Tides and Sailings as they both form an introduction to position fixing and the following of passage plans. It is recommended that this Unit is delivered before the Unit D77R 35 *Celestial Navigation*.

The knowledge and skills acquired in this Unit will be practised extensively at sea so that the experience gained can be utilised in the HN Unit D78F 35 *Passage Planning* which features in the later stages of the HND *Nautical Science*.

Open learning:

The preferred method of delivery is by attendance at college as the majority of candidates following this Unit will be on a training programme comprising alternating periods at college and at sea, the sea periods being utilised to put into practice knowledge and skills acquired.

Special needs

This Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs and Candidates for whom English is an Additional Language* (SQA, 2000).

General information for candidates

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On completion of this Unit you should be able to:

- explain the procedures necessary to ensure that all charts and publication are maintained and corrected
- use Mercator Charts for visual position fixing methods
- use chartwork techniques to find the adjustments to a vessel's course to take account of passage plan requirements

Outcome 1 will be assessed either orally or by an assignment on the correction of charts and the content of a randomly selected sample of the publications carried on board ship. Outcomes 2 and 3 should be combined for assessment purposes and assessed by a chartwork exercise under supervised conditions sampling position fixing methods and chartwork techniques and written questions on the fundamentals of passage planning.

Acronyms

DR	Dead Reckoning
ECDIS	Electronic Chart Display and Information System
EP	Estimated Position
ETA	Estimated Time of Arrival
IMO	International Maritime Organisation