

Higher National Unit Specification

General information for centres

Unit title: Management of Vessel Operations

Unit code: F0LX 35

Unit purpose: This Unit is about the planning and operational procedures for the safe stowage and securing of dry cargoes and the safe handling of oil, gas and chemical cargoes. It is also about the planning and operational procedures for passenger operations. 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 the Unit the candidate should be able to:

- 1 Manage cargo operations for dry cargoes, including loading, discharging, securing and cargo handling equipment and safe operating procedures.
- 2 Manage cargo operations for bulk liquid cargoes, including loading, discharging and cargo handling equipment and safe operating procedures.
- 3 Analyse the planning and operational procedures for passenger operations.
- 4 Perform cargo calculations.

Credit points and level: 2 HN Credits at SCQF level 8: (16 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 F0LM 34 *Marine Cargo Operations*, F0LJ 34 *Marine Law and Management*, F0LD 34 *Ship Stability: An Introduction*.

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

Communication: Oral at SCQF level 5

Communication: Reading at SCQF level 6

Communication: Written at SCQF level 6

Numeracy: Using Number at SCQF level 5

Numeracy: Using Graphical Information at SCQF level 5

Problem Solving: Critical Thinking at SCQF level 6

Problem Solving: Planning and Organising at SCQF level 6

Problem Solving: Reviewing and Evaluating at SCQF level 6

although there is no automatic certification of Core Skills or Core Skills components.

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: All four Outcomes will be assessed by means of closed-book assessment under supervised conditions.

Higher National Unit specification: statement of standards

Unit title: Management of Vessel Operations

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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

Manage cargo operations for dry cargoes, including loading, discharging, securing and cargo handling equipment and safe operating procedures

Knowledge and/or skills

- ◆ Dry cargo operations and legislative requirements
- ◆ Cargo operation management and control
- ◆ Cargo stowage and securing legislation
- ◆ Cargo handling equipment

Evidence Requirements

All knowledge and skills are assessed, however there is sampling **within** each of the knowledge and skills.

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

- 1 Organise the on board preparation to ensure that the cargo operations comply with respective legislation and codes for a sample of one from the following types of cargo:
 - (a) Solid bulk including grain
 - (b) Refrigerated cargoes
 - (c) General cargoes
 - (d) Deck cargoes
 - (e) Unitised cargoes
- 2 Identify the information that must be given by the shipper to the vessel prior to loading a cargo for a sample of one from the following:
 - (a) General cargoes
 - (b) Bulk cargoes
 - (c) Dangerous goods

Higher National Unit specification: statement of standards (cont)

Unit title: Management of Vessel Operations

- 3 Analyse the hazards associated with the cargo and the means adopted to minimise the risks associated with these hazards for a sample of one from the following:
 - (a) Solid bulk cargoes
 - (b) Timber deck cargoes
 - (c) Heavy lifts
 - (d) Dangerous goods
- 4 Identify the procedures that may be adopted to deal with a sample of one from the following:
 - (a) Cargo loading out of synchronisation with the plan
 - (b) Fire/spill or medical emergency involving dangerous goods
 - (c) Damaged cargo
- 5 Analyse the requirements to ensure cargo is secured effectively for a sample of one from the following;
 - (a) Grain cargoes
 - (b) Timber deck cargoes
 - (c) Cargo securing manual
- 6 Formulate procedures to ensure that all cargo handling equipment is maintained effectively in compliance with current legislation.

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

Assessment guidelines

Outcome 1 may be assessed by means of a closed-book assessment under supervised conditions, consisting of a mixture of short answer and structured questions. For assessment purposes Outcome 1 may be combined with Outcomes 2, 3 and 4.

Outcome 2

Manage cargo operations for bulk liquid cargoes, including loading, discharging and cargo handling equipment and safe operating procedures

Knowledge and/or skills

- ◆ Liquid cargo operations and legislative requirements
- ◆ Liquid cargo operation management and control

Higher National Unit specification: statement of standards (cont)

Unit title: Management of Vessel Operations

Evidence Requirements

All knowledge and skills are assessed, however there is sampling **within** each of the knowledge and skills.

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

- 1 Organise the on board preparation to ensure that the cargo operations comply with respective legislation and codes for a sample of one from the following types of cargo:
 - (a) Petroleum cargoes
 - (b) Liquefied gas cargoes
 - (c) Bulk liquid chemical cargoes
- 2 Manage the cargo operation to minimise the effect of the hazards on the vessel, environment and personnel for a sample of one from the following:
 - (a) Petroleum cargoes
 - (b) Liquefied gas cargoes
 - (c) Bulk liquid chemical cargoes
- 3 Manage the cargo operation to minimise the effect of a pollution incident involving a sample of one from the following:
 - (a) Petroleum cargoes
 - (b) Bulk liquid chemical cargoes

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

Assessment guidelines

Outcome 2 may be assessed by means of a closed-book assessment under supervised conditions, consisting of a mixture of short answer and structured questions. For assessment purposes Outcome 2 may be combined with Outcomes 1, 3 and 4.

Outcome 3

Analyse the planning and operational procedures for passenger operations

Knowledge and/or skills

- ◆ Passenger operations to meet legislative requirements
- ◆ Passenger operations: control and monitoring

Higher National Unit specification: statement of standards (cont)

Unit title: Management of Vessel Operations

Evidence Requirements

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

- (a) Evaluate the boarding arrangements (including security measures) used in passenger operations
- (b) Outline the emergency information for passengers
- (c) Analyse and explain the requirements for passenger and crew drills and training
- (d) Outline the procedures that may be adopted when there is a death of a passenger on board
- (e) Analyse how emergency situations may be dealt with on board

Assessment guidelines

Outcome 3 may be assessed by means of a closed-book assessment under supervised conditions, consisting of a mixture of short answer and structured questions. For assessment purposes Outcome 3 may be combined with Outcomes 1, 2 and 4.

Outcome 4

Perform cargo calculations

Knowledge and/or skills

- ◆ Loadline zone calculation
- ◆ Quantity on board (bulk liquid calculations)
- ◆ Quantity to load to fill the hold using stowage factor and broken stowage
- ◆ Draught surveys

Evidence Requirements

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

Perform cargo calculations from a sample of one from the following:

- (a) Perform calculations to determine the maximum amount of cargo to load to comply with loadline zone requirements
- (b) Perform calculations to determine the actual amount of bulk liquid cargo on board a vessel
- (c) Perform calculations to determine the amount of cargo required to fill a hold, utilising the stowage factor of the cargo and a given value for broken stowage
- (d) Perform calculations involving draught survey data

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

Assessment guidelines

Outcome 4 may be assessed by means of a closed-book assessment under supervised conditions, consisting of a mixture of short answer and structured questions. For assessment purposes Outcome 4 may be combined with Outcomes 1, 2 and 3.

Administrative Information

Unit code: F0LX 35
Unit title: Management of Vessel Operations
Superclass category: ZF
Original date of publication: August 2006
Version: 01

History of Changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Management of Vessel Operations

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 80 hours.

Guidance on the content and context for this Unit

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

Guidance on the delivery and assessment of this Unit

The Unit is primarily intended for candidates who are new entrants to the Merchant Navy via one of the Merchant Navy Training Board (MNTB) approved deck cadet training schemes who have already completed the HNC Nautical Science award or are appearing for a Chief Mate Certificate of Competency who already hold an Officer of the Watch Certificate of Competency.

Ideally candidates would have already accrued some shipboard experience prior to attempting this Unit, although this is not a prerequisite.

The knowledge and skills contained within the Unit cover all the requirements as laid down by 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.

Candidates will benefit most if this Unit is delivered in conjunction with the following Units: FOLN 35 *Shipmaster's Business*, FOLC 35 *Ship Stability: Theory and Practical Application* and FOLY 35 *Marine Vessels: Structures and Maintenance*. They should also be able to draw on the knowledge gained from the qualifications or Units recommended as prior knowledge as well as experience gained from service at sea.

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

Higher National Unit specification: support notes (cont)

Unit title: Management of Vessel Operations

Outcome 1

This Outcome introduces candidates to the carriage and handling of dry cargoes, including dry bulk cargoes. Candidates will learn about the characteristics of these cargoes and the legislation covering their carriage. The Outcome also considers the stowage and securing of cargoes, including deck and timber cargoes.

The hazards associated with the carriage of certain cargoes will be discussed and the procedures required to ensure their safe carriage analysed. The different types of equipment for safe handling of cargo will be examined and their effectiveness evaluated.

Requirements for the carriage of dangerous goods are also considered.

Outcome 2

This Outcome deals with the carriage of liquids and chemicals in bulk and considers the hazards posed by such cargoes to the crew and environment. The legislative requirements to ensure these cargoes are loaded, carried and discharged safely will be considered and the various codes examined.

Routine and emergency procedures to deal with the carriage of these cargoes will be discussed and the preparations prior to loading or discharging analysed at length.

Outcome 3

This Outcome introduces candidates to passenger operations from the point of view of control and documentation required, plus additional training and safeguards which will be necessary, particularly from the point of view of security.

Outcome 4

This Outcome covers the differing types of cargo calculations that a senior officer may be required to undertake, in order to determine the cargo on board, the cargo that can be loaded and the maximum cargo uplift possible to remain within the criteria of the Loadline rules.

Opportunities for developing Core Skills

There are opportunities for developing the Core Skill of Communication in all three categories at SCQF level 5 or 6.

This can be achieved through candidates having to read complex legislation and codes and then summarising these in assessments. Oral communication can be encouraged by getting candidates to discuss their own experience of cargo types within the classroom setting. This is extremely beneficial to candidates who may never have sailed on a particular type of vessel.

Numeracy at SCQF level 5 can be developed through candidates carrying out cargo calculations in the classroom environment and also in formal assessments. The use of graphical information can be developed by candidates having to produce and interpret cargo plans and deal with tabular information regarding cargo.

Higher National Unit specification: support notes (cont)

Unit title: Management of Vessel Operations

Problem solving at SCQF level 6 can be developed by giving candidates a list of different cargoes and then asking them to devise a loading plan, allowing for the type of cargo, hazard rating of the cargo and load and discharge port.

This involves critical thinking at the outset in as much as the problems likely to be posed by each type of cargo need to be considered in conjunction with a lot of other factors.

Candidates can then plan the stowage of the cargo and organise how it will be loaded to maximise efficiency.

The proposed plan would then have to be reviewed to ensure that there were no conflicts of either dangerous good or taint.

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. For information on these, please refer to the SQA document *Guidance on Alternative Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on SQA's website: www.sqa.org.uk.

General information for candidates

Unit title: Management of Vessel Operations

The purpose of this Unit is to build on the knowledge and skills gained in the earlier HN Unit FOLM 34 Marine Cargo Operations.

It introduces you to the concept of planning cargo operations and controlling sequence of loading and discharging. It also introduces the main legislation concerning differing types of cargo and the implications for their safe and effective carriage.

You will become familiar with the hazards of certain types of cargoes and the procedures that must be adopted to take account of these, for example chemical cargoes. The principles and use of safety equipment carried on board to deal with these hazards will be explained.

Cargo documentation will be explained in depth and the role of the senior officer in ensuring that cargo is loaded correctly with regard to risk, temperature requirements, discharge port, stability considerations and prevention of pollution discussed at length.

You will become familiar with various types of cargo handling equipment and modes of loading and discharging. The maintenance requirements for the above will be considered in terms of current legislation.

The care and handling of passengers and the implications of safety and security and control in case of emergency will be examined.

You will also study various types of cargo calculations which are commonly found on board ship. Some of these calculations are similar to those carried out in the Unit FOLC 35 *Ship Stability: Theory and Practical Application*. The procedures for carrying out draught surveys will be discussed and the calculation procedure demonstrated.

All four Outcomes may be combined and assessed under closed-book supervised conditions, consisting of a mixture of short answer and structured questions.