

Title	Manage refrigeration systems on a commercial seafood vessel		
Level	5	Credits	10

Purpose	People credited with this unit standard are able to: explain the properties of refrigerants in terms of their suitability for use in vapour compression refrigeration systems and the required safety precautions on a commercial seafood vessel; start up and shut down a refrigeration system on a commercial seafood vessel; monitor the performance of a refrigeration system on a commercial seafood vessel; diagnose operational faults in a refrigeration system on a commercial seafood vessel; and perform unscheduled maintenance on a refrigeration system on a commercial seafood vessel.
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Classification	Seafood > Seafood Vessel Operations
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Available grade	Achieved
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Prerequisites	Open.
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Guidance Information

- 1 Legislation relevant to this unit standard includes but is not limited to – Ozone Layer Protection Act 1996; Health and Safety at Work Act 2015; Resource Management Act 1991 and local bylaws; Maritime Transport Act 1994, Maritime Rules and Marine Protection Rules, and advisory circulars issued under the Rules.
- 2 *Company requirements* refer to instructions to staff on policy and procedures that are communicated in a verbal or written form. These requirements must include legislation requirements and company safety procedures, and may include but are not limited to, industry codes of practice and standards.
- 3 For the purposes of this unit standard *refrigeration systems* used on seafood vessels includes but are not limited to – air conditioning systems, domestic refrigerators, hold refrigeration or freezer systems, and refrigeration systems involved in seafood processing, such as refrigerated seawater, ice slurry maker/ice maker, plate freezers, refrigerated fillet skimmers, brine making.
- 4 *Manage*, in this unit standard, includes the requirement to operate and maintain refrigeration systems, and diagnose and correct system faults within the requirements of New Zealand and international law, the relevant Classification Society, the charter and/or owner company, and the Master of the vessel.

Outcomes and performance criteria

Outcome 1

Explain the properties of refrigerants in terms of their suitability for use in vapour compression refrigeration systems and the required safety precautions on a commercial seafood vessel.

Range includes but is not limited to – ammonia, Refrigerant 22 (R22) and drop in replacements.

Performance criteria

1.1 The explanation includes those refrigerant properties consistent with the Ozone Layer Protection Act 1996 and the vapour compression refrigeration systems used on a seafood vessel.

Range properties – latent heat of vaporisation, specific volume, corrosive effect on metals and seals, chemical stability, flammability, toxicity, compatibility with oils, environmental impact, ease of handling, ease of leak detection.

1.2 The explanation includes refrigerant properties consistent with the supplier's Material Data Safety (MDS) information and the required safety precautions, in accordance with company requirements.

Outcome 2

Start up and shut down a refrigeration system on a commercial seafood vessel.

Performance criteria

2.1 Pre-start checks on the refrigeration system are made in accordance with manufacturer's instructions and company requirements.

2.2 Start-up procedures for the refrigeration system are in accordance with manufacturer's instructions and company requirements.

2.3 Pre-start checks and start-up procedures for the refrigeration system ensure that abnormal conditions within the systems are detected and rectified.

2.4 Shut-down procedures for the refrigeration system are in accordance with manufacturer's instructions and company requirements.

Outcome 3

Monitor the performance of a refrigeration system on a commercial seafood vessel.

Performance criteria

- 3.1 Refrigeration system pressures and temperatures are monitored and logged in accordance with company requirements.
- 3.2 The performance of protecting cut-outs and emergency shut-downs are tested and verified in accordance with manufacturer’s instructions and company requirements.

Outcome 4

Diagnose operational faults in a refrigeration system on a commercial seafood vessel.

Range refrigerant leak; moisture, scale, and other contaminants in refrigerant; abnormal operating temperatures and pressures.

Performance criteria

- 4.1 Diagnosis is consistent with fault and manufacturer’s information.
- 4.2 Diagnosis is undertaken safely and documented in accordance with company requirements.
- 4.3 Advice is sought to assist in the diagnosis of faults when these can not be identified or located, in accordance with company requirements.

Outcome 5

Perform unscheduled maintenance on a refrigeration system on a commercial seafood vessel.

Range identify and remove oil, air, water, scale and sludge contaminants from refrigerant; seal leaks in refrigerant system; select and replenish oil and refrigerant; adjust refrigerant flow; replace system components; defrost; isolate/lock out system for maintenance.

Performance criteria

- 5.1 Unscheduled maintenance is performed in a manner consistent with personal safety, the safety of the vessel and its crew, and the environment.
- 5.2 The unscheduled maintenance performed is consistent with the efficient operation of the refrigeration system, manufacturer’s instructions, and company requirements.

Planned review date	31 December 2028
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 February 2005	N/A
Review	2	19 September 2008	N/A
Rollover and Revision	3	29 February 2024	N/A

Consent and Moderation Requirements (CMR) reference

0123

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the Muka Tangata - People, Food and Fibre Workforce Development Council qualifications@mukatangata.nz if you wish to suggest changes to the content of this unit standard.