Title	**Operate and monitor a vessel's engines and auxiliary equipment**		
Level	**4**	**Credits**	**10**

Purpose	This unit standard is intended for people studying towards a qualification in vessel operation or crewing with the intention of applying for a Maritime New Zealand license. People credited with this unit standard are able to: manage engine and auxiliary equipment fuel, water, lubricants, and spare parts for a voyage; start up and shut down engines and auxiliary equipment; and operate and monitor engines and auxiliary equipment to maintain operational performance and explain responses to machinery faults.

Classification	Maritime > Marine Engineering

Available grade	Achieved

Guidance Information

1 Legislation relevant to this unit standard includes:
Health and Safety at Work Act 2015.
Maritime Transport Act 1994 and subsequent amendments.
Local bylaws as applicable.

2 References
Maritime Rules and Advisory Circulars available at http://www.maritimenz.govt.nz.

3 Definitions
Accepted industry practice refers to standardised practices and procedures accepted by the wider maritime industry as examples of best practice.
Auxiliary equipment refers to equipment not required for the propulsion engines to function, such as bilge, fire, and hydraulic pumps; winches; steering gear; and electrical alternators and generators.
Electrical system refers to items downstream of the generators and batteries such as deck lights, navigation lights, fuses and fuse links, circuit breakers, switches, and light fittings.
Engines refers to the propulsion engines, and any components that are an integral part of the engines and required for them to function, such as fuel systems, lubrication systems, cooling systems, filters, hoses, gear boxes, drive shafts, bearings and seals.
Operating procedures refers to the safe operating procedures documented in the vessel's Marine Transport Operator Plan as well as any undocumented standard operating procedures for that vessel.

Maritime Transport Operator Plan refers *to* the documented operational plan required for all commercial vessels as a part of the Maritime Operator Safety System (MOSS), the operator certification system established under Part 19 of the maritime rules and administered by Maritime New Zealand.
Vessel refers to any form of commercial or military watercraft; sometimes used in maritime circles interchangeably with the word ship.

4 Assessment information
All activities and evidence must be in accordance with accepted industry practice, and vessel operating procedures.

Outcomes and performance criteria

Outcome 1

Manage engine and auxiliary equipment fuel, water, lubricants, and spare parts for a voyage.

Performance criteria

1.1 Fuel, water, and lubricants are received, and quantities are checked.

1.2 Spare part quantities and specifications are checked.

1.3 Documentation is completed.

Outcome 2

Start up and shut down engines and auxiliary equipment.

Performance criteria

2.1 Pre-start checks of engines, auxiliary equipment, and electrical system are conducted.

2.2 Engines and auxiliary equipment are started.

2.3 Engine alarms and safety systems are tested.

2.4 Emergency starting procedures are tested.

2.5 Engines and auxiliary equipment are shut down.

2.6 Any faults are managed.

Outcome 3

Operate and monitor engines and auxiliary equipment to maintain operational performance and explain responses to machinery faults.

Performance criteria

3.1 Engines and equipment are operated to maintain correct operational performance in accordance with prevailing conditions.

Range in slight and moderate or rough seas.

3.2 Main engine oil and coolant flow, fuel usage, levels, temperatures and pressures are monitored.

3.3 Drive train watertight integrity and vibration are monitored.

3.4 Auxiliary equipment oil levels, bilge water pumping systems, alarms, and electrical system are monitored.

3.5 Responses to machinery faults are explained.

Range broken belts, uneven running, unanticipated engine shut down, excessively leaking stern gland, unusual driveline vibration, overheating, low oil pressure, black smoking.

3.6 Any non-conformance is rectified, recorded, and reported.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 1995	31 December 2015
Review	2	21 May 1995	31 December 2015
Review	3	30 January 1997	31 December 2015
Review	4	30 July 2002	31 December 2015
Review	5	18 March 2011	31 December 2016
Review	6	15 October 2015	31 December 2022
Review	7	24 September 2020	N/A

Consent and Moderation Requirements (CMR) reference	0054

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

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.