

Competency Framework for Skipper Fishing Vessel - Limited

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Function: Navigation and Position Determination

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Voyage Planning and Navigation</p> <p><i>Voyage Planning and Navigation Cont.</i></p>	<p>1. Interpretation of charts and their data</p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Identifies data on the chart relating to: surveys, publication, printing, corrections, depths and topographical detail to assess the reliability and suitability of the chart for an intended passage.</p> <hr/> <p>Demonstrates knowledge and understanding of the publications available and, in general terms, the information available for planning a safe passage</p> <hr/> <p>Draws a diagram to illustrate the data used on charts for measuring: Depths Drying heights Tide levels Heights of shore objects.</p> <hr/> <p>Explains the meaning of the terms: chart datum, drying height, mean high water springs and soundings.</p>

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<p>Voyage Planning and Navigation Cont.</p>	<p><i>Interpretation of charts and their data cont.</i></p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Explains the meaning and significance of specified symbols and abbreviations used on New Zealand charts (as contained in NZ 201).</p> <p>Identifies by reference to the chart, dangers in making a specified landfall by day or night, and appropriate means of checking a vessel's position in these circumstances.</p> <p>Describes the topography of the coastline, foreshore and seabed by reference to symbols and abbreviations on the chart.</p> <hr/> <p>Describes the characteristics of the following:</p> <ul style="list-style-type: none"> • lights, • buoys, • beacons and • other aids to navigation by reference to symbols and abbreviations on the chart. <hr/> <p>Explains the meaning of the terms used to describe lights.</p> <p>Names an official publication which gives details of the sounds made by different types of fog signals.</p> <p>Identifies dangers to navigation, defined limits, prohibited areas, sector and leading lights in a specified area.</p> <p>Describes and explains the limitations and dangers of Electronic charting systems in current use. (E.g. ECDIS – vector and rasterscan)</p> <p>Describes and demonstrates how to use radio listening watches to obtain weather forecasts, navigation warnings and other information.</p> <p>Demonstrates how to make necessary adjustments to the passage plan on receipt of warnings received by radio broadcasts.</p>

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Voyage Planning and Navigation Cont.	2. Correction of Charts	Approved training and service experience by way of written assessment and oral examination.	<p>Demonstrates how to make a small correction by reference to a fortnightly edition of the New Zealand Notices to Mariners.</p> <p>Demonstrates how to record the execution of a chart correction.</p> <p>Describes the action to be taken if previous small corrections have not been made.</p> <p>Describes the procedure for noting temporary and preliminary Notices to Mariners.</p> <p>Describes what navigation warnings may be promulgated initially on scheduled radio broadcasts and knows where those schedules are obtained.</p>
	3. Use of Latitude and Longitude Scales		<p>Demonstrates how to plot position on a chart, given latitude and longitude.</p> <p>Demonstrates how to find the latitude and longitude of a position on the chart.</p>

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Voyage Planning and Navigation Cont.	4. Tidal Streams and Currents	Approved training and service experience by way of written assessment and oral examination.	<p>Demonstrates how to determine the direction and rate of the tidal stream from a charted tidal reference point at a specified time and date, given the relevant tide tables.</p> <p>Demonstrates how to determine the approximate direction and rate of the tidal stream or current at a specified time and date by reference to arrows on the chart.</p> <p>Demonstrates how to plot vectors from tidal reference points to illustrate the direction and rate of the tidal streams for each hour of a specified period on a given date, by reference to the tidal stream tables on the chart and the New Zealand tide tables.</p> <p>Demonstrates how to determine the state of the tidal stream in French Pass or Tory Channel at a specified time on a given date, by reference to the New Zealand tide tables.</p> <p>Calculates the ground speed, given the rate of a tidal stream or current flowing in the same direction or in the opposite direction from the vessel's water track.</p>
	5. Tides and Clearances		<p>Demonstrates how to use the New Zealand Tide Tables to determine the following:</p> <ul style="list-style-type: none"> • The times and heights of high and low water at any New Zealand port • The height of the tide at a specified time • The time at which the tide will reach a specified height • The vertical clearance under any overhead obstruction, given the height of the tide, the vertical clearance of the obstruction above MHWS, and the air draught of the vessel • The clearance under the keel, given the height of the tide, the charted depth, and the draught of the vessel • The days of the month when spring and neap tides occur at a specified

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			standard port.
Voyage Planning and Navigation Cont.	6. Distance and Speed	Approved training and service experience by way of written assessment and oral examination.	<p>Defines the following terms:</p> <ul style="list-style-type: none"> • log distance, • log speed, • water track speed, • ground distance, • ground track speed, • knot, • drift and • rate. <p>Demonstrates how to measures distance on charts.</p> <p>Describes the functions and limitations of mechanical and electrical logs.</p> <p>Demonstrates how to solves time, speed and distance problems</p>
	7. Direction		<p>Explains the meaning of the following terms and demonstrates the procedure for obtaining :</p> <ul style="list-style-type: none"> • The course, course to steer, heading, water track and ground track of a vessel • The bearing of one object from another • The relative bearing of an object from a ship • The set of a tidal stream or current • The leeway angle. <p>Demonstrates how to obtain true directions from the chart</p> <p>Demonstrates how to plot true directions on the chart.</p> <p>Explains the common symbol (R) and how it is used to denote a relative</p>

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			<p>bearing.</p> <p>Demonstrates how to calculate true bearing, given relative bearing and the ship's head.</p>
<p>Voyage Planning and Navigation Cont.</p>	<p>8. Terrestrial observations for coastal position fixing</p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Explains the meaning of the following terms :</p> <ul style="list-style-type: none"> • Geographical range • Raising a light • Luminous range • Nominal range. <p>Demonstrates how to determine the geographical range of a specified light, given the observer's height of eye, chart or list of lights, geographical range table or formula.</p> <p>Demonstrates how to determine the luminous range of a specified light given the meteorological visibility and a luminous range diagram.</p> <p>Demonstrates how to determine if a specified light will be visible given the height of the observer's eye, the meteorological visibility and the observer's position.</p> <p>Determines the time, range and the compass bearings at which lights will dip or be raised given the height of the observer's eye, the meteorological visibility and the observer's position, course and speed.</p>

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<p>Voyage Planning and Navigation Cont.</p>	<p>9. Plan and Track Voyage</p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Explains the principles of passage planning.</p> <p>Demonstrates how to plan and track for the following scenarios:</p> <ul style="list-style-type: none"> • Area affected by tides, • restricted waters, • restricted visibility, • traffic separation schemes, and • ice. <p>Demonstrates the ability to select, plot and justify safe tracks between two specified places, given characteristics of the vessel, approximate date and time of departure and appropriate charts and tide tables.</p> <p>Defines the meaning of the following terms:</p> <ul style="list-style-type: none"> • Dead reckoning position, • estimated position, and • track made good. <p>Identifies the following symbols and uses the abbreviations for:</p> <ul style="list-style-type: none"> • dead reckoning position, • estimated position, and • fix <p>Describe and explain all the factors, which affect the movement of a vessel over the ground, and the means by which they may be measured or estimated.</p> <p>Given the compass course steered, log speed or log distance, any alteration of speed or course, the departure position, the time and the direction and rate of the tidal stream and/or current and leeway;</p> <p>Demonstrates by plotting, the ability to find</p>

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<p>Voyage Planning and Navigation Cont.</p>	<p><i>Plan and Track Voyage cont.</i></p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<ul style="list-style-type: none"> • The dead reckoning or estimated position at a specified time • The time at which a specified position will be reached • The compass bearing and distance off a specified position at a specified time. <p>Demonstrates the ability to determine by reference to a sequence of 2 or more timed fixes:</p> <p>The ground distance, ground speed and ground track made good</p> <p>The EP at a specified time, by extending the ground track</p> <p>The time at which a specified position will be reached</p> <p>The distance the ground track passes off a specified position given that the course steered, log speed, wind direction and strength and set and drift of the tidal stream remain unchanged.</p> <p>The true rate and direction of a current or tidal stream.</p>

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<p>Voyage Planning and Navigation Cont.</p>	<p>10. Vessel positioning</p>		<p>Describes the duties of the person in charge of the bridge watch with regard to establishing the vessel's position as accurately as possible at regular intervals</p> <p>Describes the practical procedure required to obtain the following:</p> <p>Compass, relative and transit bearings of terrestrial objects by visual and radar observations</p> <p>Ranges by radar observations</p> <p>The geographical range of a coastal light.</p> <p>Demonstrates how to fix position by plotting position lines given the data obtained by the methods listed above.</p> <p>Demonstrates how to obtain the position on the second position line given compass bearings of one or more objects with the water track between, allowing for tidal stream or current and/or leeway.</p> <p>Explain all the factors that determine the reliability and accuracy of position lines obtained by the methods above.</p> <p>Demonstrate how to assess and comment on the reliability of a fix obtained by a specific set of observations.</p>
		<p>Approved training and service experience by way of written assessment and oral examination.</p>	

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Voyage Planning and Navigation Cont.	11. The Relationship Between Compass, Magnetic True and Relative Directions	Approved training and service experience by way of written assessment and oral examination.	<p>Demonstrates how to find and apply variation and deviation to true courses to obtain the compass courses to the nearest degree,</p> <p>Demonstrates how to find and apply deviation and variation to compass courses to obtain the true courses to the nearest degree.</p> <p>Demonstrates how to find true bearings given compass or relative bearings and the ship's head.</p> <p>Demonstrates how to apply variation to convert true directions to magnetic and vice versa.</p>
	12. Course to steer and distance between positions		<p>Demonstrates how to plot the ground track between 2 positions and finds the true, magnetic and compass courses and ground track distance between them.</p> <p>Demonstrates how to determine the time required to complete a passage between 2 or more specified positions given the water track speed.</p> <p>Demonstrates how to find the compass course to steer between 2 positions and the time taken in order to make good the ground track between them allowing for tidal stream or current and/or leeway.</p>

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Voyage Planning and Navigation Cont.	13. Uses Notices to Mariner and other publications to assess accuracy of position	Approved training and service experience by way of written assessment and oral examination.	<p>Describe the uses and limitations of echo soundings as an aid to establishing the position of the vessel.</p> <p>Demonstrates understanding of the publications available and, in general terms, the information available for planning a safe passage.</p> <p>Demonstrates the ability to make necessary adjustments to the passage plan on receipt of warnings received by radio broadcasts.</p> <p>Uses NZ 202 to select charts for a passage</p> <p>Demonstrates understanding of the requirements of Maritime Rule Part 25 that are applicable to coastal ships and fishing vessels.</p>

Function: Magnetic and Gyro Compass

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Use of Magnetic and Gyro Compass	1. Use of the compass	Approved training and service experience by way of written assessment and oral examination.	Demonstrates how to use the marine compass to take bearings and state the bearings relative to compass north and the ship's head.
	2. Ferro-magnetic materials		Explains the precautions required with regard to ferro-magnetic materials when using a magnetic compass. Identifies materials and equipment commonly found on coastal vessels, those, which may disturb a magnetic compass.
	3. Handheld compass		Identifies and explains the advantages and limitations of a hand held compass.
	4. Gyro compass		Explains the precautions required when using a gyro compass with regard to comparison with the magnetic compass course.
	5. Reliance on automatic pilot		Explains the consequences of relying on automatic pilot with regard to fatigue.
	6. Use of automatic pilot		Explains the consequences of relying on automatic pilot with regard to accuracy of course.

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Use of Magnetic and Gyro Compass cont.	7. Identify the parts of the magnetic compass and how to maintain them	Approved training and service experience by way of written assessment and oral examination.	<p>Identifies component parts of a typical liquid magnetic compass, binnacle, and associated equipment, carried by coastal vessels.</p> <p>Describes the causes, effects and symptoms of common faults.</p> <p>Describes the precautions and maintenance necessary to minimise the occurrence of faults.</p> <p>Explains what action to take when faults are detected.</p>
	8. Compass Rules and Regulations		<p>Demonstrates knowledge and understanding of the Rules or Regulations that specify the statutory requirements for compasses on coastal vessels.</p> <p>Explains the function of a Compass Adjuster.</p> <p>Describes the circumstances in which there is a need or a requirement to adjust compasses.</p> <p>Demonstrate knowledge and explains the duties of the master specified in Maritime Rule Part 45 or subsequent Rules.</p>
	9. Variation, Deviation and Compass Error		<p>Explains the conditions on board when the deviations in the Table of Deviations are correct.</p> <p>Defines and explains the cause variation.</p> <p>Explains the meaning of the term 'local magnetic anomaly'.</p> <p>Demonstrates how to obtain the value of the variation to the nearest degree from the chart or from the diagram in the New Zealand Nautical Almanac given the vessel's position and the date.</p> <p>Identifies and explains the general causes, including heeling error, of change in a vessel's deviation.</p>

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Use of Magnetic and Gyro Compass cont.	<i>Variation, Deviation and Compass Error cont.</i>		<p>Identifies and explains the precautions to be taken when navigating in an area where local magnetic anomalies exist.</p> <p>Defines and describes the causes of deviation and explains why it changes</p> <p>Describes why it is necessary to check the compass error frequently.</p> <p>Demonstrates the practical procedures for obtaining bearings to find the compass error and deviation.</p> <p>Demonstrates how to Find the error of the compass and deviation for the vessel's heading given:</p> <ul style="list-style-type: none"> • The compass bearing of 2 points in transit • The compass bearing of a distant object from a known position • The compass bearing of the Sun when rising or setting, • The latitude of the observer, the date and the amplitude tables. <p>Demonstrate how to construct a table of deviations given a series of compass bearings of a distant object on equidistant headings.</p>
Electronic navigation equipment used for positioning	Operate electronic navigational equipment.	Approved training and service experience by way of written assessment and oral examination.	<p>Demonstrates the use of the electronic navigational equipment</p> <p>Describes the dilution of precision concept and the accuracy of the system.</p> <p>Demonstrates the ability to make datum adjustments to satellite derived positions using charted information.</p> <p>Explains the dangers of relying on GPS position fixing alone when secondary methods such as visual observations, radar, echo sounder are available to verify the vessel's position.</p>

Function: Watch Keeping

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Watchkeeping	1. Engine checks	Approved training and service experience by way of written assessment and oral examination.	Describes the procedure to maintain engine checks during the watch.
	2. Safe watchkeeping practices		Describes the following safe watchkeeping practices: <ul style="list-style-type: none"> • watchkeepers to be experienced and capable, • precautions to be taken against fatigue, • number of watchkeepers to be increased at critical times, • auto pilot to have a frequent re-set alarm • radar to be used in addition to and not instead of a visual lookout, and • the hazards associated with 'divided command'.
	3. Buoys and Beacons		Identifies the buoys and beacons of IALA System "A" by day or night and describes the appropriate action to take on encountering them.
International Regulations for the Prevention of	1. International Collision Prevention Regulations	Approved training and service experience by way of written assessment and oral	Demonstrates the correct actions to avoid collision when vessels are: <ul style="list-style-type: none"> • approaching from right ahead, • approaching from forward of the beam, and • overtaking.

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Collision at Sea.	2. Recognise lights, shapes and signals for all classes of vessel	examination.	Identifies but is not limited to the following: <ul style="list-style-type: none"> • navigation lights, • day shapes • fishing vessels, • fog signals and • power driven vessels
	3. Recognise sound signals for all classes of vessel		Identifies the maneuverings, sound signals and when to use them.
	4. Margins of safety		Explains the procedure for keeping a proper lookout in order to maintain a margin of safety between own vessel and other traffic
	5. Safe distances between vessels and the land		Demonstrates understanding that a boat may be too close to land by interpreting the position: <ul style="list-style-type: none"> • Using the actual range of land relative to range rings set on the radar by the skipper as the minimum distances allowable, • using the actual depth shown on the echo sounder relative to the depth indicated by the skipper as the minimum allowable, and • from a GPS lat/long read out against the parameters set by the skipper.
Collision prevention actions	Risk of Collision	Approved training and service experience by way of written assessment and oral examination.	Describes the procedures for determining if a risk of collision exists
			States the correct action to take, by day or night, in any visibility to avoid

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			<p>collision in any case</p> <p>Demonstrates ability to identify risk of collision using:</p> <ul style="list-style-type: none"> • compass bearings, • visually, and • by radar. <p>Describes the precautions to take in poor visibility with regard to :</p> <ul style="list-style-type: none"> • Speed • Radar • Autopilot • Fog signals • Navigation light • Lookout • Echo sounder <p>Demonstrates the ability to assess the likelihood of collision with an approaching vessel and describes the appropriate action to take in poor visibility from a relative motion radar plot.</p>

Function: Radar Navigation

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Operate Radar	1. Performance	Approved training and service experience by way of written assessment and oral examination.	Identified the factors affecting the performance and accuracy of the radar being used
	2. Using the radar and interpreting the data received from the radar.		Demonstrates how to set up the radar and maintain the displays. Identifies misrepresentations. Identifies critical echoes. Demonstrates how to establish the range and bearing of a radar target.
	3. Using radar for collision avoidance		Demonstrate how to establish the course and speed of other ships. Determines the time and distance of closest approach of the following: <ul style="list-style-type: none"> • crossing ships, • meeting ships, and • overtaking ships. Demonstrate how to detect when other ships change course and or speed. Demonstrates how to identify the effect of changes in own vessel's course and or speed.

Function: Meteorology

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Meteorology	Obtain and apply meteorological Information.	Approved training and service experience by way of written assessment and oral examination.	Identifies the sources of marine weather broadcasts available to vessels in New Zealand coastal waters, by reference to the New Zealand Nautical Almanac.
			Identifies weather conditions that are liable to damage the vessel.
			Demonstrates how to use the ship borne meteorological instruments.
			Finds the time and radio telephone frequencies of scheduled marine weather broadcasts by reference to the New Zealand Almanac.
			Explains the meaning of the terms used in marine weather broadcasts.
			Demonstrate how to draw a rough sketch of the isobaric pattern and movements given a map of New Zealand coast waters showing an outline of the coast, and a situation report.
			Describes variations in direction and strength of the wind, and the sea conditions that occur due to coastal landforms.
			Describes the correct procedures for operating a radio facsimile recorder.

Meteorology cont.	<i>Obtain and apply meteorological Information. Cont.</i>	Approved training and service experience by way of written assessment and oral examination.	Identifies the following on a sample New Zealand Meteorological MSL Analysis map: <ul style="list-style-type: none"> • Depressions, anticyclones, tropical depressions, ridges, troughs • Warm, cold, stationary and occluded fronts.
			Identifies and gives a basic description of the following on a sample New Zealand Meteorological MSL Analysis map, given a specified time and location, or coastal forecast area: <ul style="list-style-type: none"> • The approximate strength and direction of the wind • The sea state • The approximate barometric pressure and pressure tendency • The predominant cloud type • The likelihood of precipitation • The likelihood of reduced visibility.
			Demonstrate how to predict the following conditions that may be expected for up to 12 hours at a specified location or coastal forecast area: <ul style="list-style-type: none"> • The approximate strength and direction of the wind • The sea state • The approximate barometric pressure and pressure tendency • The predominant cloud type • The likelihood of precipitation • The likelihood of reduced visibility Given the expected movements of the main systems on a sample New Zealand Meteorological MSL Analysis map.

Function: Fishing Vessel Manoeuvring and Handling

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Theory of Manoeuvring and Handling	1. Manoeuvres around pilot vessels and pilot stations	Approved training and service experience by way of written assessment and oral examination.	Describes the manoeuvres when approaching pilot vessels or stations and includes consideration of the following: <ul style="list-style-type: none"> • weather, • tide, • head reach, and • stopping distances.
	2. The effect of weather and water condition in specified locations.		Describes the effects of current, wind and restricted water on the response to the helm for the following locations: <ul style="list-style-type: none"> • rivers, • estuaries, • sandbars, and • other similar locations
	3. Manoeuvring in shallow water		Describes what considerations should be taken when manoeuvring in shallow water. Should include but is not limited to keel clearance due to the effects of rolling and pitching.
	4. Fishing vessel interactions.		Describes the interaction between passing ships and the fishing vessel suction Describes the interaction between the fishing vessel and nearby banks (canal effect).

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Theory of Manoeuvring and Handling cont.	5. Berthing and unberthing and manoeuvring alongside other vessels	Approved training and service experience by way of written assessment and oral examination.	Identifies the requirements for berthing and unberthing under various conditions of wind and tide, with and without tugs. Identifies the requirements for manoeuvring alongside other vessels under various conditions of wind and tide, with and without tugs.
	6. Anchoring		Explains and describes choice of anchorage
			Explains and describes anchoring with one or two anchors. Should include: <ul style="list-style-type: none"> • limited anchorage, and • factors involved with determining the length of anchor cable to be used.
			Explains what is meant by the following with regard anchors and the actions that should be taken: <ul style="list-style-type: none"> • dragging, • fouling, and • clearing.
	7. Dry Docking		Explains and describes dry docking of a fishing vessel with and without damage
8. Handling of a Fishing Vessel.	Describes the principles for managing and handling a fishing vessel in heavy weather for the following scenarios: <ul style="list-style-type: none"> • assisting a ship, vessel or aircraft in distress, • towing operations, • means of keeping an unmanageable fishing vessel out of a sea trough, • lessening drift, and • use of oil. 		

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Theory of Manoeuvring and Handling cont.</p>		<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Explains the importance of navigating at reduced speed to avoid damage caused by own fishing vessels bow or stern wave.</p>
	<p>9. Launching Life Boats or Life Rafts</p>		<p>Describes the practical measures to be taken when navigating in:</p> <ul style="list-style-type: none"> • ice or conditions of ice accretion on board, and • tropical waters, among coral reefs etc.
	<p>10. Manoeuvring and engine characteristics of major types of fishing vessels</p>		<p>Describes the use of and manoeuvring in, traffic separation schemes.</p> <p>Describes the considerations and precautions for manoeuvring the fishing vessels during fishing operations with special regard to factors which could adversely affect the fishing vessel's safety during such operations.</p>
<p>Manoeuvring and Handling of a Fishing Vessel</p>	<p>Berth, unberth and anchor a fishing vessel</p>		<p>Describes how to Berth, unberth and anchor a fishing vessel in various conditions of wind and tide.</p>
			<p>Describes how to manoeuvre a fishing vessel in shallow water.</p>

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
		Approved training and service experience by way of written assessment and oral examination.	<p>Describes how to manage and handle fishing vessels in heavy weather.</p> <p>Describes how to manoeuvre a fishing vessel during fishing operations.</p> <p>Describes how to manoeuvre a fishing vessel and describe the procedures for transferring fish to another vessel at sea.</p>

Function: Fishing Vessel Construction and Deck Equipment.

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Ship Construction</p>	<p>Principal structural members</p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Identifies the principal structural members of a fishing vessel.</p>
			<p>Describes and identifies the principal stresses to a ship's structure at sea and discharging operations</p>
			<p>Demonstrate how to read and interpret shipboard plans, which include the general arrangement, pumping and piping and shell expansion.</p>

Function: Stability

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Traverse Stability	1. Stability terminology and meanings	Approved training and service experience by way of written assessment and oral examination.	Explains the meaning of the following terms: <ul style="list-style-type: none"> • Centre of gravity, • centre of buoyancy, • metacentric height, • righting lever, • period of roll, • displacement, • deadweight, • tonnes per centimetre immersion (TPC), • freeboard, • reserve buoyancy, • watertight integrity, • list, and • heel.

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	<p>2. Interaction of gravity and buoyancy</p>	<p>Approved training and service experience by way of written assessment and oral examination.</p>	<p>Explains how the stability of a vessel depends on the interaction of the forces of gravity and buoyancy</p> <p>Identifies at small angle of heel, in a stable condition or unstable condition, the following:</p> <ul style="list-style-type: none"> • The positions of the centre of gravity and centre of buoyancy and metacentre. • Lines representing the forces of gravity and buoyancy. • The position of the centre of buoyancy when the vessel was upright. • The movement of the centre of buoyancy. • The righting or capsizing lever. <p>Explains that the position of the centre of gravity of a vessel depends on the distribution of weight.</p> <p>Describes how the position of the centres of gravity and buoyancy move, and how the length of the righting lever changes in the following circumstances:</p> <ul style="list-style-type: none"> • When weight is added to any part of the vessel. • When weight is removed from any part of the vessel. • When weight on board the vessel is shifted. • When a weight is being transferred by ship's gear from outside to position on board, or vice versa. <p>Describes the effect on stability of freely suspended weights.</p>
<p>Free Surface Effect</p>	<p>The Influences of free surface effect</p>		<p>Explains the meaning of the term 'free surface effect'.</p> <p>Identifies and explains the common causes of free surface effect.</p> <p>Identifies and explains the practical steps that can be taken to minimise free</p>

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
			surface effect.
Maintaining Stability	Principles for maintaining vessel stability	Approved training and service experience by way of written assessment and oral examination.	Lists and explains the practical steps that can be taken by the master to ensure the vessel remains in a stable condition at all times.
			Describes the changes in distribution of weight that occur during the course of a typical voyage of a limited fishing vessel.
			Identifies bad practices and conditions that may result in a dangerous loss of stability.
			Identifies and explains common bad practices and conditions that may cause capsize.
			Identifies and explains the general causes of reductions in freeboard and reserve buoyancy.
			Describes the dangers that result from excessive reductions in freeboard and reserve buoyancy.
			Explains how the rate of increase of the righting lever with heel reduces rapidly once the deck edge of a rolling vessel is submerged, and that stability may vanish completely thereafter.
			Identifies examples of specific situations, which result in dangerous loss of freeboard and reserve buoyancy.
			Identifies the significance of weather tight and watertight integrity

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Maintaining Stability cont.	<i>Principles for maintaining vessel stability cont.</i>	Approved training and service experience by way of written assessment and oral examination.	Describes the use of closing appliances efficiently to achieve effective watertight integrity.
			Identifies examples of closing appliances provided for the use of the crew to achieve watertight integrity.
			Identifies the effects of free surface and ice accretion where applicable.
			Explains the fundamental actions to be taken in the event of partial loss of intact buoyancy.
			Explains the effects of water on deck.
			Explains the use of load lines and load line marks as they apply to vessels of up to 500 gross tonnage.
			Demonstrates how to solve simple problems, by calculation, involving shift of G when weights are loaded, discharged, shifted or suspended based on the formula $GG1 = \frac{w \times d}{W}$
			Demonstrates how to Use stability data, stability and trim tables, pre-calculated operating conditions and information contained in a vessel's stability information book to determine metacentric height, mean draft and angle of vanishing stability.
			Explains the effect of list and adverse trim on the vessel's stability and handling. Explains what the period of roll indicates.

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
			Calculates the approximate metacentric height from the roll period using $GM = \frac{0.35 \times B^2}{T^2}$ or other acceptable formulae.

Function: Catch Handling and Stowage

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Catch Handling and Stowage	The effects of catch handling and stowage	Approved training and service experience by way of written assessment and oral examination.	Describes the effects upon a fishing vessel of catch handling and stowage factors, including: <ul style="list-style-type: none"> • Distributing the weight vertically, longitudinally and transversely so that the vessel's centre of gravity, trim and stresses, in the hull remain within safe limits. • Ensuring the catch or cargo are properly protected from deterioration or damage, and remain in a safe state throughout the voyage. • Ensuring the system of loading and unloading is safe and efficient. • Adhering to all statutory and company regulations.
			Describes how to stow and secure catch and fishing gear on board a vessel.
			Describes how to load and discharge a catch from a fishing vessel.

Function: Operate and Maintain Fishing Vessel Power Plant

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Operate and Maintains Fishing Vessel Power Plants	Operating principles of power plants	Approved training and service experience by way of written assessment and oral examination.	Explains the operating principles of marine power plants and ancillary machinery in a fishing vessel. Demonstrates general knowledge of marine engineering terms.

Function: Fire Prevention and Fire Fighting Techniques

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Fire Prevention	1. Main causes of fire	Approved training and service experience by way of written assessment and oral examination.	States the main causes of fires on board vessels.
	2. Main elements of fire and explosion		States the three main elements of fire and explosion.
Fire Safety Procedures	Firefighting equipment		Describes the following: <ul style="list-style-type: none"> • The appropriate action to take on finding a fire on board, • where to direct a jet of foam to extinguish an oil fire, • the correct extinguisher to use on each type of fire, • the location of Fire Fighting Appliances on board, and • the appropriate action to be taken after a fire.
			Describes fire safety procedures and the use of portable and fixed fire-fighting equipment.
			Identifies the rule requirements for fire fighting equipment for a limited fishing vessels
			Demonstrates how to organise fire drills.

Function: Safety

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Personal Safety	1. Protective clothing	Approved training and service experience by way of written assessment and oral examination.	Identifies protective clothing and circumstances in which it should be used.
	2. Hazard identification		Identifies the hazards of refrigerant gases and precautions to take. Identifies hazard areas on deck and precautions to take.
	3. Working Conditions		Describes the following adverse effects which influence work practices: Isolation, dependence on each other, and Discomfort.
	4. First Aid		Describes strategies to overcome each adverse effect. Demonstrates first aid procedures.
Vessel Safety	1. Vessel movement		Describes the danger caused by the vessel's movement and accelerations and the precautions that can be applied in differing situations.
	2. Slippery surfaces		Describes the danger of slippery surfaces on board a vessel and the precautions that should be taken when working on slippery surfaces.
	3. Fishing operations		Describes some of the dangers associated with fishing operations. This may include but is not limited to the following: <ul style="list-style-type: none"> • Shooting fishing gear into the water, • hauling the fishing gear, and • landing the catch on board.

Cleanliness	1. Personal hygiene		Explains the procedures and reasons for maintaining personal hygiene.
	2. Vessel cleanliness		Explains the procedures and reasons for maintaining boat cleanliness.

Function: Emergency Procedures.

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Responses to Emergency Situations	1. Fishing vessel beaching	Approved training and service experience by way of written assessment and oral examination.	Specifies the precautions to be taken when beaching a vessel
	2. Fishing vessel grounding		Identifies the actions to be taken prior to and after grounding.
	3. Gear becoming fast to the ground or other obstructions		Specifies the action to be taken when the gear becomes fast to the ground or other obstruction.
	4. Re-floating a grounded vessel		Describes the process for floating grounded vessel, with and without assistance.
	5. Collision		Describes the appropriate actions to be taken after a collision.
	6. Plugging leaks		Demonstrate how to plug leaks using appropriate procedures.

Responses to Emergency Situations cont.	7. Contingency planning	Approved training and service experience by way of written assessment and oral examination.	Demonstrates how to prepare a contingency plans for the protection and safety of fishing vessel personnel in emergencies. Demonstrates the ability to follow emergency procedures specified in the vessel's contingency plan. Describes the measure to be taken to prevent falling or being swept overboard. Describes the relevant emergency situation duties and responsibilities.
	8. Limiting damage and salvaging		Describes the procedures for limiting damage and salvaging the vessel following a fire or explosion.
	9. Abandon Ship		Describes the procedures to be followed in abandoning the fishing vessel.
	10. Emergency steering arrangements		Specifies the emergency steering arrangements.
FAO/ILO/IMO Code for Fishermen and Fishing Vessel Personnel	Knowledge of safety procedures		Demonstrate knowledge of fishing vessel on-board safety precautions. Demonstrate knowledge of safety in fishing operations techniques and procedures.
Assistance in Emergency Situations	Rescuing persons from a ship in distress or a wreck		Describes the actions to be taken when rescuing people and assisting vessels in distress Describes how to follow the recommended procedures for rescuing persons from a ship in distress or a wreck. Describes the man overboard procedures. Demonstrates how to follow the man overboard procedures. Describes precautions to be taken in manoeuvring for launching boats or life

Assistance in Emergency Situations cont.		Approved training and service experience by way of written assessment and oral examination.	rafts in bad weather
	Towing		Describe the procedures for towing and being towed. Demonstrates how to apply the procedures for towing and being towed.

Function: Medical Care

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Render First Aid to Injured Persons	Basic First Aid	Approved training and service experience by way of written assessment and oral examination.	Demonstrates how to apply first aid.
	Medical Advice		Describes the procedure for obtaining medical advice by radio.
	International Medical Guide for Ships		Demonstrates ability to use and interpret information from the International Medical Guide for Ships or its equivalent publications.
	International Code of Signals		Demonstrates how to use the medical section of the International Code of Signals

Function: Casualty Reporting

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Accident Reporting	Casualty Report forms	Approved training and service experience by way of written assessment and oral examination.	States the range of accidents specified in the current legislation which must be reported to Maritime New Zealand on a Casualty Report Form.
			Identifies and explains the information, which must be gathered and recorded at the time of any accident, specified in current legislation, and which may be required to complete an accident report.
			Identifies and explains the procedures, specified in the current legislation, with respect to the reporting of accidents.

Function: Maritime Law

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Certificate of Registry	Ship Registration and Certification	Approved training and service experience by way of written assessment and oral examination.	States which vessels are required to be registered and the exceptions as specified in the Ship Registration Act. Outlines the procedures for: <ul style="list-style-type: none"> Registering a ship in New Zealand for the first time, registering a change of ownership of the ship, and registering a change of master of the ship. Identifies the information to be lodged to complete the registration. Identifies the requirements for the custody of the Certificate. Identifies the persons entitled to see the Certificate.
Other Responsibilities	1. International Instruments		Identifies the responsibilities under other international instruments such as the FAO Code of Conduct for Responsible Fisheries.
	2. Torremolinos Protocol		Identify the legal responsibilities toward the relevant requirements of the 1993 Torremolinos Protocol.
	3. SOLAS		Identifies the legal responsibilities, as appropriate, under the SOLAS Convention.
	4. Prevention of Collision at Sea		Identifies the legal responsibilities under the International Regulations for the Prevention of Collisions at Sea.

	National and International Law		Identifies national laws and regulations that are applicable to fishing vessels. Identifies relevant rules and regulations and agreements affecting all aspects fishing operations in fishing areas.
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Function: Marine Pollution

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Marine Pollution	Legislation	Approved training and service experience by way of written assessment and oral examination.	<p>Defines pollution of the marine environment.</p> <p>States that discharge of oil and sewage or disposal of garbage within the 12-mile limit is covered by regulation under the Resource Management Act.</p> <p>States that discharge of oil or disposal of garbage beyond the 12-mile limit is covered by the Maritime Transport Act and Marine Protection Rules.</p>
			<p>Discusses the provisions of Part XIX of the Maritime Transport Act with particular reference to the following sections:</p> <ul style="list-style-type: none"> • Interpretation. Section: 225 • Obligation to protect Marine Environment from harmful substances. Sections: 226, 227, 228, 230. • Powers of the Director (of Maritime New Zealand) in relation to protection of Marine Environment from harmful substances. Sections: 233, 235. • Defences. Section: 243 • Penalties. Sections: 244, 245, 246
			<p>Describes the requirements of Part 170 of the Marine Protection Rules – Prevention of Pollution by Garbage from Ships and Offshore Installations.</p>
			<p>Describes the provisions of the Marine Protection Rules under sections of the Maritime Transport Act.</p>

Pollution Prevention	Practical methods Pollution Prevention and Knowledge of International Protocol.	Approved training and service experience by way of written assessment and oral examination.	Describes the International Convention for the Prevention of Pollution from Ships known as MARPOL as it applies to ships up to 500 gross tonnage and fishing vessels up to 60 metres registered length.
			Describes the limits and conditions under which plastics, dunnage, packaging materials and other garbage may be disposed of.
			Identifies and explains methods of dealing with oily water in bilge's and tanks.
			Identifies and explains practical steps to avoid discharge of oil over side when loading or transferring oil fuel.
			Describes precautions to be routinely taken to prevent pollution of the marine environment by oil, garbage or other pollutants.
			Lists and explain the actions to take in the event of an oil spillage or other pollution event.

Function: Global Maritime Distress and Safety System (GMDSS) and Radio Communications

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
GMDSS	1. Select Appropriate Services	Approved training and service experience by way of written assessment and oral examination.	Identifies navigational and meteorological warning systems. Demonstrates how to select the appropriate service. Identifies the adverse effects of misuse of communication equipment.
	2. Operate Radio Telecommunications		Demonstrates how to operate radio communication equipment. Demonstrates how to operate radio services in an emergency. Describes how to apply search and rescue radio communication procedures. Demonstrates how to use the ship reporting system. Demonstrate how to apply the radio medical services procedure. Describe the measures to protect personnel from radiation hazards.
Visual Signals	International Codes		Demonstrates how to use the International Code of Signals.

Function: Survival Techniques

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Response Procedure	1. Emergency	Approved training and service experience by way of written assessment and oral examination.	Describes the procedures to be taken in response to emergencies. Identifies all the methods for signaling distress available to the crew of a fishing vessel. Describes and demonstrate how to tune an SSB or VHF radio transmitter in order to send a distress signal and correctly repeat the format of a MAYDAY call.
	2. Survival		Describes personal survival procedures. Describes the value of emergency training drills.
Emergency Equipment	1. Location of Emergency Equipment		Identifies the location of the lifesaving equipment.
	2. Use of Life Jackets and Lifebuoys	Describes the use of life jackets and lifebuoys and the situations where it is appropriate to use them. Demonstrates how to: <ul style="list-style-type: none"> • Use life jackets and lifebuoys, and • maintain life jackets and lifebuoys. 	
	3. Use of Flare and Rockets	Describes the use of flare and rockets and the situations where it is appropriate to use them. Demonstrates how to:	

Emergency Equipment cont.		Approved training and service experience by way of written assessment and oral examination.	Use flares and rockets, and maintain flares and rockets.
	4. Use of Life Rafts		<p>Describes the use of life rafts and the situations where it is appropriate to use them.</p> <p>Identifies the equipment that is to be in a life raft.</p> <p>Demonstrates how to:</p> <ul style="list-style-type: none"> • Use life rafts, and • maintain life rafts.

Function: Search and Rescue

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Search and Rescue.	Search and Rescue Procedures	Approved training and service experience by way of written assessment and oral examination.	Identifies search and rescue procedures specified by the Merchant Ship Search and Rescue Manual (MERSAR) and the International Aeronautical and Maritime Search and Rescue Manual (IMAMSAR Manual).
			Demonstrates how to apply search and rescue procedures specified by the Merchant Ship Search and Rescue Manual (MERSAR) and the International Aeronautical and Maritime Search and Rescue Manual (IMAMSAR Manual).

Function: Human Relationships

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Personnel Management Recommendation	1. Management	Approved training and service experience by way of written assessment and oral examination.	Identifies management requirements for fishing vessel personnel.
			Demonstrates how to establish training arrangements for safeguarding human relationships on board fishing vessels.
			Demonstrates how to apply measures to minimize loneliness and isolation among fishing vessel personnel.
	2. Training and Assessments		Describes how to conduct functional skill training arrangements.
			Describes how to make on-board functional skill assessments.
			Describes how to conduct muster and drills.

Function: Codes of Conduct for Responsible Fisheries

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Understands the Principles and Guidelines of the Codes of Conduct	1. Codes of Conduct	Approved training and service experience by way of written assessment and oral examination.	Describes the objective of the Codes of Conduct for Responsible fisheries.
	2. Responsible harvesting		Describes the effects of discards and by-catch. Identifies the causes of habitat damage through fishing operations. Demonstrates knowledge by making recommendations with regard to the disposal of lost fishing gear. Describes the purpose of marine reserves.
	3. Responsible fishing gear selectivity		Describes how to apply recommendation with regard to the disposal of unserviceable fishing gear. Identifies the causes of vessel / gear conflicts. Explains the importance of fishing gear selectivity. Explains the factors that affect the size selectivity. Explains the factors that affects species selectivity.
	4. Energy optimisation		Explains the various factors that can optimize energy use in the fishing industry.

Function: Official Log Book

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Official Log Book (OLB)	OLB procedures and entries.	Approved training and service experience by way of written assessment and oral examination.	Identifies which vessels are required to keep an OLB.
			Identifies and explains the required and desirable entries to be made in the OLB.
			Explains the procedure for the delivery and archiving of the OLB.
			Demonstrate knowledge that vessels not required to keep an OLB must maintain proper records under Maritime Rules Parts 19 and 44

Function: Manage Legal Compliance

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Legal requirements for operation of a commercial vessel	Vessel operation and applicable legislation	Approved training and service experience by way of written assessment and oral examination.	The operations of a commercial vessel are identified as conforming to all applicable legislation including operational limits, qualifications, crewing and watch keeping, minimum personnel, all applicable maritime rules, guidance notices and safety bulletins.
Maritime Operator Safety System	1. Maritime Operator Safety System (MOSS)		The requirements of MOSS are described consistently with Maritime Rules Parts 19 and 44
	2. Maritime Transport Operator Plan (MTOPlan)		The requirements for development of a MTOPlan are described consistently with rule requirements
	3. Maritime Transport operator Certificate (MTOC)		The requirements for issue of an MTOC are described consistently with maritime rules, including requirements for a Fit and Proper Person

Integrated compliance	Integrate compliance within vessel operation	Vessel safety management system is integrated into the operation and management of the vessel. On-going continuous improvement is demonstrated by evolving safety system and documentation and review.
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