TABLE A-II/2 Guidelines for Assessment

Specification of minimum standard of competence

For Masters and Chief Mates on ships of between 500 and 3,000 Gross Tonnage (ITC) on International Voyages

Function: Navigation at the management level

STCW Competence	Knowledge, understanding and proficiency	Performance Condition	Performance Behavior	Performance Standard
Plan a voyage and conduct navigation.	*Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.:* *.1 restricted waters;* *.2 meteorological conditions;* *.3 ice;* *.4 restricted visibility;* *.5 traffic separation schemes; and* *.6 areas of extensive tidal effects.* *Routing in accordance with the General Principles on Ship's*	On a ship underway or in a navigational laboratory,	the candidate will create a navigation plan for a voyage of at least 600 miles with passages in both daylight and nighttime hours, and a passage through restricted waters.	**Appraisal** The candidate's plan takes into account paragraph 2 of the annex to IMO Assembly Resolution A 893(21): 1. the condition of the vessel, equipment, operational limitations, draft, and maneuvering characteristics; 2. any special characteristics of the cargo and its stowage; 3. crew members' competency and rest status; 4. the status of all ship's certificates and documents are

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	Routing *			up-to-date; 5. up-to-date charts of proper scale, and the latest notices to mariners and radio navigational warnings; 6. up-to-date coast pilots, sailing directions, and other information sources appropriate for the voyage; 7. relevant routing guides; 8. up-to-date tide and current tables and atlases; 9. weather information; 10. weather routing services; 11. ship reporting systems, VTS, and environmental protection measures; 12. vessel traffic density for the route; 13. pilotage requirements and information exchange; and 14. port information, including emergency response capability.

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				Planning The candidate's plan contains the following in accordance with paragraph 3 of the annex to IMO Assembly Resolution A 893(21): 15. courses plotted on the appropriately scaled charts, noting the ETA at each waypoint, including the final waypoint; 16. courses and distances between waypoints are correctly calculated and indicated on the charts; 17. the most direct route that avoids all hazards to navigation by the margin of safety of three miles, where possible; 18. on all charts for the voyage, an indication of the number of the next chart to be used and where its coverage begins; 19. the areas of all

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				required speed changes; 20. the minimum under-keel clearances in critical areas; 21. positions requiring a change of machinery status; 22. waypoints of all course changes; 23. the methods and frequency of position fixing, including areas requiring the highest accuracy; 24. the positions and radio hailing frequencies or channels where port authorities, pilots, and VTS services must be notified are noted on the relevant chart; 25. the state of the tide and currents at the port of departure for the times of departure and transit are determined; and 26. contingency plan for alternative actions in cases of emergency.

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Plan a voyage and conduct navigation.	*Reporting in accordance with the Guidelines and Criteria for Ship Reporting Systems* *	On a ship underway or in a navigational laboratory,	the candidate will describe all ship position reporting and VTS systems required for the route.	The candidate: 1. correctly identifies all shoreside entities requiring ship positions reports and all VTS services for the route; 2. correctly describes all reporting requirements and 3. notes the hailing frequencies and position reporting requirements of all VTS services on the appropriate charts.
Determine position and the accuracy of resultant position fix by any means.	*Position determination by celestial observation**	On a ship underway, with the sun and the horizon visible, and at least three minutes before or three minutes after the time of meridian passage over the meridian of the observer,	the candidate will measure the altitude of the sun and calculate the latitude of the ship at meridian passage using the ex-meridian observation.	The latitude calculated at meridian passage is within ± .5 nm of the assessor's position.
		On a ship underway, with a celestial body other than the sun at upper transit and a clear horizon,	the candidate will measure the altitude of the body as it crosses the meridian of the observer and calculate the latitude of the ship.	The latitude calculated at meridian passage is within ± .5 nm of the assessor's position.

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Determine position and the accuracy of resultant position fix by any means.		On a ship underway or in a navigational laboratory, given the times of observation, altitudes, and azimuths of three unknown stars,	the candidate will identify the three stars.	Within 20 minutes, the candidate correctly identifies the stars.
		On a ship underway or in a navigational laboratory, given the times of observation,	the candidate will identify the best three stars or planets to obtain a fix.	Within 20 minutes, the candidate selects three stars: 1. that are the three brightest; and 2. that have the greatest crossing angles between each other.
		On a ship underway or in a navigational laboratory, given at least four intercepts and azimuths obtained from celestial sight reductions, and the times and assumed positions for each,	the candidate will plot the ship's position at the time of the last observation.	The candidate: 1. plots the position within 12 minutes; and 2. the position is within ± .5 nm of the assessor's position.
		In a navigation laboratory or on a ship underway, given a latitude and longitude of departure and a latitude and longitude of arrival at least 3,000 nautical miles apart, and using a hand held non-	the candidate will calculate the great circle route between the point of departure and the point of arrival.	The candidate's: 1. initial course is within ± .5° of the assessor's solution; 2. total distance is within 1 nm of the assessor's position; 3. position of the vertex is within .1 nm of the assessor's

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		programmable calculator, sight reduction tables, or Publication Number 9 Tables,		position; and 4. position of points along the great circle at intervals of 5° (300 miles) is within 1 nm of the assessor's solution.
	Calculate courses and distances	In a navigation laboratory or on a ship underway, given a latitude and longitude of departure and a latitude and longitude of arrival at least 1,000 nautical miles apart, and using a hand-held non-programmable calculator, or Publication Number 9 Tables,	the candidate will calculate the Mercator course and distance between the point of departure and the point of arrival.	The candidate: 1. determines the initial course within ± .5° of the assessor's solution; and 2. determines a total distance within 1 nautical mile of the assessor's position.
		In a navigation laboratory or on a ship underway, given a latitude and longitude of departure and a course and distance for a passage of at least 1,000 nautical miles, and using a hand-held non-programmable calculator, or Publication Number 9	the candidate will calculate the final position using the Mercator formula.	The position is within 1 nautical mile of the assessor's position.

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		Tables,		
Determine position and the accuracy of the resultant position fix by any means.	*Position determined by terrestrial observations, including the ability to use appropriate charts, notices to mariners, and other publications to assess the accuracy of the resulting position fix**	On a ship underway, or a full mission ship simulator, with land and aids to navigation in sight, using a standard bearing circle, alidade, or other device for taking bearings, and given a chart with a scale of no more than 1: 150,000,	the candidate will determine the bearings of at least two charted objects and plot them on the chart in use.	The candidate's: 1. position is within ± .1 nautical mile of the assessor's position; 2. crossing angles of bearings should be not less than 30° nor more than 160° between bearings; 3. bearings of objects abeam or close to the beam are observed first; and 4. chart in use is the largest scale suitable for the waters being transited.
	Position determined by using modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction to obtain accurate position fixing *	On a ship underway, on a full mission ship simulator, or in a navigation laboratory, using a GPS receiver which meets IMO standards, and given a port of departure and a port of arrival at least 2,000 nautical miles apart in a generally east-west direction with at least 3 legs, that include	the candidate will enter the waypoints and route for the voyage into the GPS.	The candidate: 1. correctly determines, enters, and saves waypoints; 2. correctly enters and saves the route; and 3. correctly designates the great circle or rhumb line legs.

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	GPS	both rhumb line and great circle legs,		
Determine and allow for compass errors.	*Ability to determine and allow for errors of the magnetic and gyro-compasses* *	On a ship underway or a full mission ship simulator, using navigational or natural terrestrial ranges, only a magnetic compass, and a chart with variation,	the candidate will note the vessel's magnetic compass heading while aligned on the range and determine magnetic compass deviation.	The candidate: 1. compares the magnetic heading to the charted range or bearing; 2. determines and properly labels the magnetic compass error; 3. determines the variation from the chart; 4. obtains a deviation ± 2° of the assessor's solution; and 5. correctly records the deviation in the compass record book and the ship's log.
			the candidate will construct a deviation table.	The candidate: 1. swings the ship to a cardinal heading by the magnetic compass and compares the magnetic heading to the charted range or bearing; 2. determines and properly labels the magnetic compass

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				error; 3. determines the variation from the chart;obtains a deviation solution that is ± 2° of the assessor's solution; 4. correctly records the deviation in the compass record book and the ship's log; 5. repeats the process every 15 degrees to the next cardinal heading by magnetic compass; and 6. constructs a deviation table for the 45° compass segments.
	Ability to determine and allow for errors of the magnetic and gyro compasses * Amplitude	On a ship underway, with the center of the sun on either the visible horizon or the celestial horizon,	the candidate will measure the bearing of the sun.	The candidate: 1. reads the bearing of the sun when the repeater is level; 2. notes the time of the reading; 3. determines the true bearing of the sun for the time of the reading (if the bearing of the sun is taken on the visible horizon, properly applies the Table 28

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				correction); 4. compares the compass bearing to the true bearing and determines the compass error; and 5. obtains a solution ± 2° of the assessor's solution.
		On a ship underway, a full mission ship simulator, or in a navigational laboratory, and given a deviation table,	the candidate will correctly apply the compass error to the course by magnetic compass to make good the intended true course.	The candidate: 1. correctly applies compass error to the magnetic course; and 2. obtains a solution ± 2° of the assessor's solution.
			the candidate will correctly apply the magnetic compass error to the magnetic bearings of at least two charted objects and plot them on the chart in use.	The candidate: 1. correctly applies magnetic compass error to the magnetic bearings; and 2. obtains a position ± .5 nm of the assessor's position on a chart with a scale of no more than 1:150,000.
		On a ship underway, a full mission ship simulator, or in a navigational laboratory,	the candidate will correctly apply the compass error to the course by gyro-compass to make good the intended true course.	The candidate: 1. correctly applies compass error to the gyro-compass course; and 2. obtains a solution ± 2° of the assessor's

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				solution.
Coordinate search and rescue operations.	*A thorough knowledge of, and an ability to apply, the procedures contained in the IMO Merchant Ship Search and Rescue Manual (MERSAR)* *	On a ship underway, a full mission simulator, a navigational laboratory, or in an approved Coast Guard Search and Rescue course,	the candidate will plan for the coordination of search and rescue operations.	The candidate: 1. establishes communication methods and message texts to be used in search patterns in accordance with MERSAR; 2. determines the most probable search area by calculating: a. the target probability area when the intended course of the target is known; and b. the set and drift of a life raft using a set and drift graph of approximate drift values; 3. determines the type of search pattern and plots from memory from the point of origin a parallel track and an expanding square search pattern on a chart of appropriate scale; and

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				4. coordinates at least one other vessel in the search pattern.
Establish watchkeeping arrangements and procedures.	*Thorough knowledge of content, application, and intent of the International Regulations for Preventing Collisions at Sea (COLREGS)* *	On a ship underway or a simulator,	the candidate will identify vessels through the observation of their light configurations.	The candidate correctly identifies the situation and occupation of 16 out of 20 vessels that have different light configurations or aspects.
		On a ship underway or a simulator,	the candidate will identify vessels through observation of their day shapes.	The candidate correctly identifies the situation and occupation of 8 out of 10 vessels that have different day shapes.
	Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea *	On a ship underway, a full mission ship simulator, or using approved laboratory equipment, when risk of collision exists with an approaching vessel in a meeting situation in good visibility in the open ocean,	the candidate will apply the Rules of the Road correctly and maneuver the vessel to avoid a collision, if required.	The candidate: 1. determines the aspect of the approaching vessel; 2. identifies the situation as a meeting situation; 3. takes positive action in ample time in accordance with the steering and sailing rules to achieve a CPA of at least 3 nm; and 4. ensures speed or course changes are large enough to be

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				readily apparent to another vessel observing visually or by radar.
Forecast weather and oceanographic conditions.	*Ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax* *	On a ship underway or in a laboratory, given synoptic surface weather charts and 500mb weather charts of the previous 24-hour period, and temperature, pressure and wind readings for the previous 8 hours,	the candidate will determine the weather to be encountered during the next 24-hour period.	The candidate's determinations of expected wind, sea, and weather conditions (types and amount of cloud cover, rain, and fog) are correct when compared with the movement of the systems and fronts during the subsequent 24-hour period.
	Knowledge of the characteristics of various weather systems, including tropical revolving storms, and avoidance of storm centers and dangerous quadrants *	On a ship underway or in a laboratory, given the characteristics of a warm, cold, and occluded front, including the types of clouds found with each front,	the candidate will correctly identify the front.	Within 1 minute, the candidate correctly identifies the warm, cold, and occluded front.
	Ability to calculate tidal conditions *	On a ship underway or in a navigation laboratory, given a zone time at a subordinate location,	the candidate will correctly calculate the height of the tide.	The candidate correctly determines the height of the tide for the designated time.
		On a ship underway or in a navigation laboratory, given a zone	the candidate will correctly calculate the current.	The candidate correctly determines the current for the designated time.

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		time at a subordinate location,		
		On a ship underway or in a navigation laboratory, given a desired height of the tide at a subordinate location,	the candidate will correctly calculate the time of the height of the tide.	The candidate correctly determines the time of a designated height of the tide.
Respond to navigational emergencies.	*Action to be taken if grounding is imminent, and after grounding* *	In a practical course of instruction, or on a full-mission ship simulator, or a ship at sea, during a drill simulation of a grounded vessel,	the candidate will order the appropriate steps to minimize grounding damage.	The candidate orders: 1. all watertight doors closed, the hull checked, the bilges and tanks sounded, and all spaces below the waterline visually inspected where possible; 2. establishment of communications with the engine room and the sea suction switched if necessary; 3. the transfer of ballast and fuel as necessary; 4. updating the GMDSS position from the GPS, as

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				required; 5. the OICNW to determine the type of bottom on which the vessel grounded; and 6. the watch to determine the threat of oil pollution.
	Refloating a grounded ship with and without assistance *		the candidate will order the appropriate steps to prepare for refloating a grounded vessel.	The candidate orders: 1. calculation of the depth of water around vessel; 2. calculation of the effects of tide and current; 3. calculation of the time and height of the next high tide; 4. the best placement of assist boats (if available); 5. maintenance of constant radio communications with assist boats; 6. display of proper day and night signals; 7. continuous monitoring of weather forecasts; 8. the determination of the structural

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				integrity of the hull; 9. calculation of the ship's stability and stresses aground; 10. calculation of the effect of de-ballasting or cargo removal; and 11. the crew to stand clear of towing lines once pulling commences.
	Action to be taken if collision is imminent	In a practical course of instruction, or on a full mission ship simulator, or a ship at sea, during a drill simulation of an imminent collision,	the candidate will order the appropriate steps to prepare for a collision.	The candidate orders: 1. the closure of all water tight doors; 2. the broadcast of appropriate radio messages; 3. the sounding of danger, maneuvering, and ship's emergency signals, as required; 4. alerting the engine room; and, 5. maneuvering of the ship to lessen the force of impact.
	Action to be taken following a collision or impairment of the watertight integrity of the hull by any cause	In a practical course of instruction, or on either a full mission ship simulator or a ship at sea, during a drill simulation of the ship after a collision,	the candidate will order the appropriate steps to maximize the safety of crew and vessel.	The candidate: 1. assesses damage and determines if the vessel has lost watertight integrity; 2. checks for injuries to personnel and

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		after a collision,		ensures all personnel have PFDs on; 3. determines flooding conditions and takes appropriate action to minimize flooding; 4. determines reserve buoyancy by assessing freeboard remaining (less than 50% of normal operating condition might warrant consideration of controlled "abandon ship" order) or determining reserve buoyancy through other means; 5. determines if threat of oil pollution exists; 6. maintains communication with other vessel and renders assistance if possible; 7. monitors the weather; 8. determines if maneuvering is appropriate for safely separating the vessels; and, if so, 9. maneuvers the

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				vessel to minimize the effect of further damage.
	Emergency steering *	In a practical course of instruction, or on either a full-mission ship simulator or a ship at sea, during a drill simulation of the ship suffering a steering casualty that can not be corrected by switching steering motors,	the candidate will order the correct actions to operate the emergency steering system.	The candidate orders: 1. switching the steering motor to the motor not in use; 2. crewmembers to the aft steering room; 3. the establishment of communications with the steering engine room; 4. switching the steering control from the bridge to the steering engine room; and 5. the appropriate helm orders or courses to be steered.
	Emergency towing arrangements and towing procedures *	In a practical course of instruction, or on a full-mission ship simulator, or a ship at sea, during a drill simulation of the ship suffering an engine casualty;	the candidate will order the correct actions to prepare the vessel for emergency towing.	The candidate: 1. orders that the anchor and chain be lowered to the water (or into the water as directed by the towing vessel); 2. ensures the chain will not pay out until the towing vessel requests additional chain; and 3. lowers a messenger

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				to the waterline in case it is needed.
Maneuver and handle a ship in all conditions.	Maneuvering to recover a man overboard	At sea, on a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship between 500 and 3,000 Gross Tonnage (ITC),	the candidate will maneuver the vessel to recover a man overboard.	The candidate: 1. sounds the alarm, posts a look-out, and places the engines on stand-by/maneuvering mode; 2. commences shipboard recovery using a Williamson turn, Anderson turn (destroyer turn), racetrack turn, or Y-backing based on assessment of the conditions (weather, seas, visibility, traffic, crew available to assist, etc); 3. activates: a. life-ring/buoy; b. smoke float and/or dye marker; c. strobe light; d. search light; e. EPIRB; f. GPS man overboard; g. plotter or marker; h. notes position; and

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				i. Broadcasts "PAN PAN"over Channel 16 VHF; 4. determines the direction and force of the wind and sea; 5. ascertains which side to make the retrieval on; 6. determines the heading needed to make a lee for the man overboard; 7. approaches the recovery point after determining how the presence of other traffic maneuvering in the area affects the recovery (if present); and 8. maneuvers and slows the vessel to make a lee and to allow the launching of a boat or recovery using other means.
	Handling a ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind, and restricted water on helm response *	On a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage, in an	the candidate will pilot the vessel.	The candidate: 1. determines the intended track of the vessel; 2. determines the force and direction of the wind and current;

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		exercise of at least 30 minutes, transiting restricted waters, in a river with a current,		3. sets courses to counter the effects of wind and current to maintain the ship on the intended track; and 4. uses the proper speed and rudder orders to maintain the ship on the intended track during turns around points and bends in the river.
	Application of constant rate of turn techniques *	On a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC), in an exercise with a turn of least 50°,	the candidate will complete the turn while maintaining a constant rate of turn throughout the maneuver.	The candidate determines: 1. the radius of the turn; and 2. and applies the correct amount of rudder to maintain the rate of turn with no more than two adjustments of less than 5° each.
	Maneuvering in shallow water, including the reduction in underkeel clearance caused by squat, rolling, and pitching *	On a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC)	the candidate will set the speed to prevent the vessel from touching bottom.	The candidate: 1. determines the under-keel clearance; 2. determines the maximum speed allowable to keep

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		Gross Tonnage (ITC),		the vessel from squatting and. touching bottom; and, 3. sets the speed of the vessel to keep the ship on an even trim on straight courses and during turns
	Interaction between passing ships and between own ship and nearby banks (canal effect) *	On a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC), upon meeting a deep draft vessel in a narrow channel,	the candidate will pass the other vessel close aboard.	The candidate: 1. orders the rudder over left before the bow waves of each vessels intersect; 2. shifts the rudder after the bows pass; and 3. when the sterns clear, shifts the rudder and then steadies on the original course.
	Berthing and unberthing under various conditions of wind, tide, and current without tugs	At sea, on a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC), in clear visibility, with a wind speed of less than 15 knots and a current of	the candidate will demonstrate docking a vessel starboard side to a pier.	1. **Planning** The candidate determines: a. the depth of water at the berth for the state of the tide; b. the strength and direction of the current for the route to, and at,

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		less than 3 knots, on a single-screw vessel with a right-hand propeller,		the berth; c. the direction and velocity of the wind; and d. the appropriate courses and maneuvers for the approach to the berth. 2. **Approach** The candidate maneuvers the vessel so that it approaches the dock at the angle required by the wind and current, and at a speed that allows the vessel to maintain its heading and to be stopped to prevent allisions. 3. **Docking** The candidate: a. uses the engines and spring line, as necessary, to stop the vessel or move it into final position; b. properly runs the mooring lines; and

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				c. takes in all slack lines until the vessel lays secure alongside.
			the candidate will demonstrate docking a vessel port side to a pier.	1. **Planning** The candidate determines: a. the depth of water at the berth for the state of the tide; b. the strength and direction of the current for the route to, and at, the berth; c. the direction and velocity of the wind; and d. the appropriate courses and maneuvers for the approach to the berth. 2. **Approach** The candidate maneuvers the vessel so that it approaches the dock at the angle required by the wind and current, and at a speed that allows the vessel to maintain its

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				heading and to be stopped to prevent allisions. 3. **Docking** The candidate: a. uses the engines and spring line, as necessary, to stop the vessel or move it into final position; b. properly runs the mooring lines; and c. takes in all slack lines until the vessel lays secure alongside.
	Choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used *	At sea, on a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC), in clear visibility, with a wind speed of less than 15 knots and a current of less than 3 knots,	the candidate will demonstrate anchoring the vessel.	1. The candidate's anchor plan includes determining: a. depth of water; b. type of bottom; c. wind and current; c. bottom obstructions; d. room to swing; e. place to anchor; f. courses and engine orders to the anchor site; g. desired final heading; and

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				h. expected weather for the time at anchor. **2. Approach** If possible, the ship does not pass to windward or up current of any anchored vessel or hazard to navigation, or the ship had enough way to pass safely any anchored ships or hazards to navigation. 3. **Placement** The candidate: a. ensures the vessel approaches the anchor site slowly; b. checks the vessel's position by natural landmarks and aids; c. puts the vessel's engines astern to stop the ship in position on the approximate desired final heading; d. drops the anchor as the vessel begins to move sternward;

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				e. backs the vessel slowly; and f. slowly pays out a length of chain 5-7 times the water depth. 4. **Fetching up** The candidate: a. allows the vessel to fetch up on the chain; and b. ensures the vessel rides on a final heading that is within 40° of the desired final heading.
Maneuver and handle a ship in all conditions	*Dragging anchor; clearing fouled anchors* *	On a ship of between 500 and 3,000 Gross Tonnage (ITC), or in a full-mission ship simulator using the math model of a ship of between 500 and 3,000 Gross Tonnage (ITC), with the vessel at anchor,	the candidate will take all precautions to determine if the vessel is dragging anchor.	The candidate: 1. sets the GPS anchor watch function; 2. sets the VRM and EBL of the ARPA or radar on prominent fixed objects; 3. takes frequent visual bearings on fixed objects approximately 90° apart; and 4. records positions in anchor bearing book 5.

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Plan and ensure safe loading, stowage, securing, and care during the voyage, and unloading of cargoes.	*Use of stability and trim diagrams and stress-calculating equipment, including automatic data-based (ADB) equipment and knowledge of loading cargoes and ballasting in order to keep hull stress within acceptable limits* *	In a stability laboratory, given Coast Guard approved stability software for a ship of between 500 and 3,000 Gross Tonnage (ITC), and during a loading of at least 1,000 tons of cargo and a discharge of at least 750 tons of cargo,	the candidate will determine the arrival GM at the next port of call, using the approved stability software, or determine the arrival GM at the next port of call manually.	The candidate properly enters the following: 1. loading and discharge data; 2. potable fresh water and ballast; 3. all stores taken aboard; 4. data of all fuel; 5. all free surface; and 6. all changes due to fuel, water, and stores consumed.
	Use of stability and trim diagrams and stress-calculating equipment,	On a ship, or in a stability laboratory, given Coast Guard	the candidate will determine the GM and damage stability	The candidate correctly completes the determination in 5 minutes or less using the
	including automatic data-based (ADB) equipment *Knowledge of the effect on trim and stability of a ship in the event of the damage to and subsequent flooding of a compartment and countermeasures to be taken* *	approved stability software for a ship of between 500 and 3,000 Gross Tonnage (ITC), with a loaded voyage condition entered, and given a simulation of a flooded engine room,	conditions or determine the GM and damage stability conditions manually.	software or in 30 minutes or less manually.
		On a ship, or in a stability laboratory, given Coast Guard approved stability	the candidate will determine the GM and stability conditions or determine the GM and	The candidate correctly completes the determination in 5 minutes or less using the

STCW Competence	Knowledge, understanding and proficiency	Performance Condition	Performance Behavior	Performance Standard
		software for a ship between 500 and 3,000 Gross Tonnage (ITC), with a loaded voyage condition entered, and given a simulation of a flooded hatch or cargo tank,	damage stability conditions manually.	software or in 30 minutes or less manually.

* Italics denote STCW proficiency from Table A-II/2 of the STCW