

06 - Boat Handling

Competence (Skills)	Knowledge, Understanding and Proficiency	Level Required		Methods for Demonstrating Competence (Qualification Standard)	Criteria for Evaluating Competence (Performance Standard)
		Coxswain Captain	Crew		
Collision Regulations and Collision Avoidance	Identify vessels in sight, and in conditions of restricted visibility that present a risk of collision early. Take early and substantial action to keep well clear of vessels to avoid close quarters situation, detect changes in target vessel's course and/or speed. Monitor vessel traffic by radio. Contact vessels by VHF to make passing arrangements making appropriate sound signals.	X	X		Crewmembers shall conduct the vessel in a manner that demonstrates sound practices of good seamanship by passing, taking early and substantial action and passing astern when appropriate. In crossing situations VHF communication will be used to clarify intentions.
Boat handling theory and techniques		X	X	<ul style="list-style-type: none"> <li>• Describe the forces acting on a vessel while manoeuvring</li> <li>• List the terms, commands and signals related to manoeuvring a small vessel</li> <li>• Discuss the handling characteristics of a RHIB</li> <li>• Perform basic maneuvers with a twin screw vessel away from the dock</li> <li>• Perform berthing and unberthing maneuvers</li> <li>• Perform coming alongside</li> </ul>	

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				another vessel	
Exhibit good boat handling skills		X	X	<ul style="list-style-type: none"> <li>• Use single screw propulsion</li> <li>• Use asymmetric or opposed propulsion (twin-screw)</li> <li>• Manoeuvre the vessel forward in a straight line</li> <li>• Manoeuvre the vessel to the sides using the helm</li> <li>• Stop the boat</li> <li>• Manoeuvre the boat backward</li> <li>• Manoeuvre a boat near other objects</li> <li>• Manoeuvre a boat to or from a dock</li> <li>• Manoeuvre a boat in rough weather</li> <li>• Manoeuvre a boat in rivers</li> <li>• Use an anchor</li> <li>• Manoeuvre a boat to beach on a shoreline</li> <li>• Ensure towing safety</li> <li>• Use standard towing procedures</li> </ul>	

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				<ul style="list-style-type: none"> <li>• Understand the use of towing equipment</li> <li>• Understand towing forces and principles</li> </ul>	
Manoeuvring a vessel		X	X	<ul style="list-style-type: none"> <li>• Knowledge to manoeuvre the vessel for berthing, departure from the dock, navigation and anchoring</li> <li>• Knowledge of the vessel's turning circle and manoeuvring characteristics</li> <li>• As applicable, the effect of propellers, rudders, jets and outboard engines when moving ahead and astern and when manoeuvring</li> <li>• Effect of winds and currents when manoeuvring</li> <li>• Understand what constitutes a good anchorage</li> <li>• Know how to properly lower and set an anchor</li> <li>• Know the procedures for riding at</li> </ul>	

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				anchor <ul style="list-style-type: none"> <li>Know how to properly weigh and stow the anchor</li> </ul>	
Manoeuvring	<ul style="list-style-type: none"> <li>Each crewmember shall turn the vessel around a confined space.</li> <li>Use the throttles and helm to maintain station of a stationary spot.</li> <li>Apply the concept of pivot point in confined spaces allowing enough room for the vessel to swing in a given area.</li> <li>Keep control and awareness of speed, throttles and position of helm to execute a confined space manoeuvre.</li> </ul>	X	X	Each crewmember shall define the terms and explain the effect of: <ul style="list-style-type: none"> <li>Wind and current on manoeuvring.</li> <li>Pivot points in forward and reverse.</li> <li>Lever and advantage</li> <li>Transverse thrust</li> <li>Outside arc (for twin engine vessels)</li> </ul>	Each crewmember shall apply the theory to successfully complete the skills. Given a familiar CCGA vessel, reasonable weather conditions, and a confined space (a square with dimensions 1.5 times the boat length or less), each crewmember shall take into account the wind and current and complete the manoeuvres listed in the skills standard. These skills shall be demonstrated at least once without damage to the vessel or other docks and/or vessels.
Control of Vessel	<ul style="list-style-type: none"> <li>Maintain control of the vessel at all times, and under all situations.</li> <li>Continually assess the situation and information flow to make determinations as to the risk level of the vessel, and take</li> </ul>	X	X	<ul style="list-style-type: none"> <li>Understand the concepts of situational awareness.</li> <li>Understand how monitoring vessel &amp; crew-situation status will assist with maintaining control.</li> </ul>	Lead the crew and vessel through all situations with (full regard to the collision regulations, and the consideration of other traffic. Ensure that the vessel minimizes

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	steps to mitigate or manage risks as they arise.				impact to shorelines, environment, marine mammals, sensitive waterways, and other traffic.
Operate small boat for SAR Operations	Knowledge of: <ul style="list-style-type: none"> <li>• symptoms and treatment of hypothermia;</li> <li>• towing practice;</li> <li>• various techniques for recovering persons from the sea.</li> <li>• local knowledge of operating port area by small boat;</li> <li>• small craft fuel systems;</li> <li>• small craft ignition systems;</li> <li>• Canadian Aids to Navigation system;</li> <li>• Collision Regulations;</li> <li>• basic chart work;</li> <li>• search patterns;</li> <li>• local knowledge of surrounding waters, including currents &amp; tides.</li> </ul>	X	X	Ability to: <ul style="list-style-type: none"> <li>• manoeuvre small craft;</li> <li>• dock and undock small craft;</li> <li>• start and stop engines;</li> <li>• land on various shorelines;</li> <li>• secure small craft;</li> <li>• carry-out search patterns;</li> <li>• recover persons from the water;</li> <li>• manoeuvre alongside moving vessels;</li> <li>• read and interpret a nautical chart;</li> <li>• use a DGPS type positioning device to follow a search plan;</li> <li>• navigate in accordance with good marine practice, taking into account sea condition &amp; traffic.</li> </ul>	Actions taken during towing operations are in accordance with safe working practices, and take into account the safety of both vessels as well as crewmembers and persons being rescued. Small boat operation is carried out in accordance with: <ul style="list-style-type: none"> <li>• Small Vessel Regulations;</li> <li>• Collision Regulations;</li> <li>• Oil Pollution Prevention regulations;</li> <li>• Vessel procedures.</li> </ul>
Manual Navigation	Safely navigate the vessel without the aid to electronic navigation equipment. Switch between electronic and manual navigation at	X	X	Understand manual navigation techniques to safely and effectively navigate the vessel in the event of a	Safely navigate using all available means and remain calm and in control in the event of a system

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	any time during the mission.			failure of the electronic navigation systems on board.	failure.
Steer the ship and comply with helm orders.	Knowledge of: <ul style="list-style-type: none"> <li>• use of magnetic and gyro compasses;</li> <li>• helm orders; and</li> <li>• change-over from automatic pilot to hand steering and vice-versa.</li> </ul>	X	X		A steady course is steered within acceptable limits having regard to the area of navigation and prevailing sea state. Alterations of course are smooth and controlled. Communications are clear and concise at all times and orders are acknowledged in a seaman-like manner
	Ensure that a safe navigational watch is maintained	X	X	<ul style="list-style-type: none"> <li>• Explain the advantages and disadvantages of radar in RHIB</li> <li>• Operate the installed navigational equipment on a RHIB while underway</li> <li>• Describe the issues relating to maintaining a safe navigational watch</li> <li>• onboard a RHIB</li> <li>• Perform a safe navigational watch onboard a RHIB in an operational environment</li> </ul>	

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	Ensure that a proper lookout is maintained			<ul style="list-style-type: none"> <li>• Value the importance of maintaining a proper lookout in RHIB operations</li> <li>• Perform a proper lookout onboard a RHIB while underway for an extended period</li> </ul>	
	<p>Navigate/operate in restricted visibility</p> <p>Navigate/operate in confined waters</p> <p>Navigate RHIBs at high speed</p>	X	X	<ul style="list-style-type: none"> <li>• Describe the policies and procedures relating to navigation in restricted visibility</li> <li>• Describe the policies and procedures relating to navigation in confined waters</li> <li>• Operate a RHIB in confined waters</li> <li>• Acknowledge the importance of situational awareness at high speed</li> <li>• Demonstrate situational awareness at high speed</li> <li>• Discuss high speed manoeuvring</li> </ul>	

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				characteristics of RHIB <ul style="list-style-type: none"> <li>• Demonstrate command and control in a high speed environment</li> <li>• Demonstrate an understanding of the uses and limitations of electronic navigational equipment at high speed</li> <li>• Apply principles of passage planning to high speed vessels</li> <li>• Discuss human resource issues relevant to high speed operations</li> <li>• Operate a RHIB at high speed for an extended period</li> </ul>	
Launch and Recovery	Demonstrate the ability to explain the vessel launch and recovery system. Each crew will be able to plan for and brief the crew to carry out a launch or recovery of the vessel. During the launch or recovery the steps will be controlled and guided by the coxswain/crew so that the boat is successfully launched or recovered.	X	X	The steps to launch and recover shall be listed along with the commands and signals. All hazards shall be identified. Critical inspection points will be listed along with suspected weakness or wear points on the launching system.	Launching will be carried out in a smooth and controlled manner where fluent communication and teamwork are emphasized.
Start-up and Departure	<ul style="list-style-type: none"> <li>• Each crewmember shall follow the steps outlined in the knowledge section to safely</li> </ul>	X	X	Each crewmember will list the steps to start their vessel. Each crewmember	Given a familiar vessel and reasonable weather conditions each

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	<p>start the vessel.</p> <ul style="list-style-type: none"> <li>• Complete pre-departure check</li> <li>• Make sure vessel is secure and crew ready (PFDs &amp; gear)</li> <li>• Visual inspection of engine area and engines</li> <li>• Run blower (apply glow plugs for diesel)</li> <li>• Turn on battery power</li> <li>• Prime engine (if necessary)</li> <li>• Start engine/engines and warm up at recommended RPM for recommended time.</li> <li>• Each crewmember shall safely use controlled engine movements to pull away from the dock.</li> </ul>			shall describe the dangers involved when missing steps in a pre-departure check and safe start up.	<p>crewmember shall safely start the vessel following all the steps outlined.</p> <p>Each crewmember shall safely and effectively use controlled and planned throttle and helm movements to pull away from the dock.</p>
Depart and come alongside a moving vessel	<p>Ability to:</p> <ul style="list-style-type: none"> <li>• approach, pace and come alongside another vessel while it is underway; and</li> <li>• operate the FRC during launch and recovery from a larger vessel.</li> </ul>	X	X		Preparation, boarding, launching and operation of fast rescue boats are within equipment limitations.
Vessel Handling and Approaches	Assess and compensate for conditions of wind and current in a towing approach. Manoeuvre the vessel through the assessment, approach,	X	X	List the different approaches along with the pros and cons for each approach. Identity the danger zones	Handle the vessel during the tow in a purposeful and careful manner so as to reduce the risk of injury and

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	and tow setup. Conduct the towing vessel through the tow maintaining appropriate line tension, astern angle and speed according to vessel hull type and weather.			of a stricken vessel in heavy weather.	damage to vessels.
Maintain and operate propulsion and auxiliary machinery.	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>operation of propulsion and auxiliary machinery;</li> <li>fuel, cooling and lubrication systems;</li> <li>bilge and fire pumping systems; and</li> <li>alarm systems.</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>carry out routine checks in the engine space;</li> <li>detect problems or respond to alarms and take appropriate corrective action; and</li> <li>start and stop propulsion and auxiliary machinery.</li> </ul>	X	X		Engine room operations are carried-out in accordance with accepted standards, Safe Working Practices Regulations and Marine occupational Safety and Health Regulations.
Water Jet Boat Standard Operating Procedures (Where applicable)	<ul style="list-style-type: none"> <li>Demonstrate proficiency in all areas outlined in jet boat standard operating procedures.</li> <li>Display ability to handle the vessel with one engine disabled, and deal with fouled</li> </ul>	X	X	<ul style="list-style-type: none"> <li>Demonstrate an in-depth understanding of the standard operating procedures for jet boats.</li> <li>Describe own vessel emergency</li> </ul>	<ul style="list-style-type: none"> <li>Recognise that jet boats need to be operated in a standard manner.</li> <li>Display appropriate confidence in the use of these vessels.</li> </ul>

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	<p>jets.</p> <ul style="list-style-type: none"> <li>• Demonstrate use of the throttles and buckets for docking and close quarters manoeuvring from both helm stations.</li> <li>• Display ability in all astern manoeuvres, as well station keeping ahead and astern, and lateral walking.</li> <li>• Demonstrate correct operation in open water including use of trim, and handling in rough waters.</li> </ul>			<p>procedures.</p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of all the manoeuvres possible using water jets, and how these differ from inboard or outboard propelled vessels.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate proper resources management with all crew.</li> </ul>
Water Jet Boat Training and Evaluation (Where applicable)	Demonstrable ability to train personnel in jet boat operations, and clearly explain the fundamentals of water jet operation.	X	X	Properly organize the training and evaluation, to produce a logical progression with the trainee, to best help them to learn, and build on the skills perfected at every stage.	Display calm and professional demeanour, providing positive feedback and comment to encourage the trainee to improve.
Propulsion and Direction Single Engine/Twin Engines	<ul style="list-style-type: none"> <li>• Each crewmember shall apply the principles of bare steerage way, and pivot point to operate the throttles and helm and manoeuvre the vessel effectively during the manoeuvring competency and the docking competency.</li> <li>• Each crewmember that is driving a twin engine vessel will apply the principle of outside arc when turning and</li> </ul>	X	X	<p>Each crewmember shall define the terms and explain the effect of:</p> <ul style="list-style-type: none"> <li>• Directed thrust versus rudder</li> <li>• Bare steerage way</li> <li>• Parts of a propeller: blade, leading edge, trailing edge, inner &amp; outer hubs, diameter, pitch,</li> <li>• shaft</li> </ul>	<ul style="list-style-type: none"> <li>• Each crewmember shall apply the theory to successfully complete the skills. Each crewmember shall apply the principles of bare steerageway, and pivot paint to operate the helm and manoeuvre the vessel effectively during the manoeuvring competency and</li> </ul>

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		Coxswain Captain	Crew		
	manoeuvring at slow speed.			<ul style="list-style-type: none"> <li>Ventilation and cavitation</li> <li>Counter rotating propellers</li> </ul>	<p>the docking competency.</p> <ul style="list-style-type: none"> <li>Each crewmember that is driving a twin engine vessel will apply the principle of outside arc when turning and manoeuvring at slow speed.</li> </ul>
Planning Trim Angle and Power Ratio	<ul style="list-style-type: none"> <li>Each crewmember shall warn the crew of intent to accelerate and safely bring the vessel up onto a plane. Each crewmember will trim engines or trim tabs to vessel's optimum performance for the given RPM and speed.</li> <li>Each crewmember shall avoid a floating object seen last minute while traveling on a plane.</li> </ul>	X	X	<ul style="list-style-type: none"> <li>Each crewmember shall define and explain the terms: <ul style="list-style-type: none"> <li>Trim, wetted surface, chine hopping, porpoising.</li> </ul> </li> <li>Each crewmember shall explain the effects of: <ul style="list-style-type: none"> <li>Under trim (trimmed in)</li> <li>Over trim (trimmed out)</li> </ul> </li> <li>Each crewmember shall describe the steps involved in a high-speed avoidance manoeuvre.</li> </ul>	Given a familiar vessel and reasonable weather conditions each crewmember shall warn the crew of intent to accelerate and bring the vessel safely onto a plane. Each crewmember will trim engines or trim tabs to vessel's optimum performance given RPM and speed.
Keep a proper lookout by sight and hearing.	Responsibilities of a look-out, including reporting the approximate bearing of a sound signal, light or other object in degrees or points.	X	X		Sound signals, lights and other objects are promptly detected and their appropriate bearing in degrees or points is reported to the officer of the watch
Station Keeping and Boarding/Pacing	Each crew member will list the steps in SAP assessment of a moving vessel and brief the	X	X	<ul style="list-style-type: none"> <li>One hand on wheel one hand on</li> </ul>	The crewmember will make a smooth controlled approach,

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	crew identifying the dangers such as: <ul style="list-style-type: none"> <li>Approaching debris or traffic</li> <li>Losing power in the wake</li> <li>Falling during transfer</li> <li>Crossing in front of the bow</li> </ul>			throttles at all times. <ul style="list-style-type: none"> <li>Keep helm and throttle changes small.</li> <li>Maintain a lookout for debris and traffic.</li> </ul>	maintaining contact and position against the vessel for a minimum of 10 seconds,
Contribute to monitoring and controlling a safe watch.	Knowledge of: <ul style="list-style-type: none"> <li>shipboard terms and definitions:</li> <li>use of appropriate internal communication and alarm systems:</li> <li>ability to understand orders and to communicate with the officer of the watch in matters relevant to watch keeping duties:</li> <li>procedures for the relief, maintenance and handover of a watch:</li> <li>information required to maintain a safe watch: and</li> <li>basic environmental protection procedures.</li> </ul>	X	X		<ul style="list-style-type: none"> <li>Communications are clear and concise, and advice/clarification is sought from the officer on watch where watch information or instructions are not clearly understood.</li> <li>Maintenance, handover and relief of the watch is in conformity with accepted practices and procedures.</li> </ul>
Confined Water Operation	Use all systems including sight and hearing, along with the use of the charts, depth sounder, chart plotter, and effective crew communications to safely navigate the vessel	X	X	<ul style="list-style-type: none"> <li>Understand all available means to navigate safely in confined water areas including shallows,</li> <li>Narrow channels and areas of</li> </ul>	Navigate in all conditions with due regard for good seamanship.

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	through confined waters.			<p>high traffic density.</p> <ul style="list-style-type: none"> <li>Understand the importance of having an escape route where feasible.</li> </ul>	
Shallow Water and Unknown Shore Approach	Before approaching an unknown shore or shallow-confined waters the crewmembers shall conduct a SAP assessment and assign the roles of forward look out, depth sounder, and navigation watch. Commands and signals shall be stated and acknowledged before the approach.	X	X	Each crewmember will list the steps to prepare a vessel for the shallows and confined water approach. They will list the commands and signals as well as identify signs of shallow water or isolated shoals/rocks.	Vessel operators will proceed slowly with extreme caution when approaching unknown waters. If there are any doubts from the crew the vessel will be stopped and position and charts will be checked.
Operate in heavy weather	Each vessel operator will be able to control the vessel in heavy weather by balancing speed with safety and comfort. The boat will be trimmed according to conditions and heading so that the bow does not rise too high or slay too low when making way in head seas or stern seas. The driver will use throttles and steering to effectively reduce excessive pitching or rolling.	X	X	<ul style="list-style-type: none"> <li>Evaluate the hazards associated with heavy weather operations for RHIB</li> <li>Explain heavy weather precautions and procedures in small vessels</li> <li>Describe precautions to be taken prior to engaging in heavy weather operations</li> <li>Describe wave theory</li> <li>Apply wave theory as it relates to RHIB operations</li> <li>Operate a RHIB in heavy weather</li> </ul>	<ul style="list-style-type: none"> <li>Operate in heavy weather Operators will conduct the vessel in a manner that emphasizes crew safety over speed of response.</li> <li>The operator will routinely slow down to check the crew's safety and fatigue during a rough weather transit.</li> <li>Each operator will know the limitations of the vessel as well as his or her own driving skill.</li> <li>A coxswain will not hesitate to</li> </ul>

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				<ul style="list-style-type: none"> <li>Perform a recovery of person from water in heavy weather</li> <li>Vessel operators will be able to recognize dangerous conditions such as: surf, breaking, shallow bars or reefs, extreme wind, high current and standing waves.</li> <li>These conditions will be avoided either by steering clear of the danger or turning back from the mission.</li> </ul>	refuse a JRCC tasking on the basis of these limitations being exceeded.
Navigation in Reduced Visibility	Consistently demonstrate the ability to safely navigate the vessel in restricted visibility using available means at hand, In compliance with applicable collision regulations, and best practices of seamanship.	X	X	Demonstrate a comprehensive understanding of navigation in restricted visibility including associated sound signals, means of detecting other vessels, provision of lookout by sight and hearing, and other relevant limited visibility precautions.	Navigate in all conditions with due regard for best practices of seamanship.
Understand meteorological processes	<ul style="list-style-type: none"> <li>Understand air masses and front</li> <li>Understand weather phenomena</li> <li>Understand weather determinants</li> <li>Understand atmosphere structure</li> </ul>	X	X		

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	<ul style="list-style-type: none"> <li>• Understand atmospheric pressure and wind</li> </ul>				
Understand oceanological processes	<ul style="list-style-type: none"> <li>• Understand current generation process</li> <li>• Understand wave generation process</li> <li>• Determine shoreline dynamics</li> </ul>	X			
Understand Sea Ice (Where applicable)	<ul style="list-style-type: none"> <li>• Understand the stages of development of ice</li> <li>• Understand the general terminology of ice</li> <li>• Understand ice dynamics</li> </ul>	X	X		