



Shipboard Launch and Recovery: WPC 154' & WPB 87' Tactics, Techniques, and Procedures (TTP)





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Subj: SHIPBOARD LAUNCH AND RECOVERY: WPC 154' & WPB 87'

Ref: (a) Shipboard Launch and Recovery Procedures Manual, COMDTINST M3120.6
(b) Operational Risk Management, COMDTINST 3500.3 (series)
(c) Rescue and Survival Systems Manual, COMDTINST M10470.10 (series)

1. PURPOSE. To provide all personnel onboard WPC 154' and WPB 87' cutters with Coast Guard tactics, techniques, and procedures (CGTTP) on shipboard launch and recovery (SLR) operations.
2. ACTION. This CGTTP publication applies to personnel engaged in or supervising SLR operations onboard WPC 154' and WPB 87' cutters. Internet release authorized.
3. DIRECTIVES/TTP AFFECTED. For the WPC 154' and WPB 87' class cutters only, this publication replaces all boat launch and recovery procedural steps contained in reference (a). Additionally, this TTP publication replaces launch and recovery parameters located in reference (a).
4. DISCUSSION. The launch of a cutter boat from a stern launch system is still a relatively new concept in the Coast Guard. This CGTTP was created to provide operator guidance and serve as a training aid based on knowledge of stern launch systems.
5. DISTRIBUTION. FORCECOM TTP Division posts an electronic version of this TTP publication to the CGTTP Library on CGPortal. In CGPortal, navigate to the CGTTP Library by selecting **References > TACTICS, TECHNIQUES, AND PROCEDURES LIBRARY**. FORCECOM TTP Division does not provide paper distribution of this publication.

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SLR WPC 154' & WPB 87'

6. REQUEST FOR CHANGES. Submit recommendations for TTP improvements or corrections through the TTP Request form on CGPortal. In CGPortal, navigate to the TTP Request form by selecting **References > FORCECOM - TTP Requests**.

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By Direction of Commander,
Force Readiness Command

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Chapter 1: Introduction

Introduction

The purpose of this chapter is to summarize the contents of this shipboard launch and recovery (SLR) tactics, techniques, and procedures (TTP) publication. This chapter also defines the use of notes, cautions, and warnings.

In This Chapter

This chapter contains the following sections:

Section	Title	Page
A	Introduction	1-2
B	Notes, Cautions, and Warnings	1-4

Section A: Introduction

A.1. SLR Performance Background/ Overview

Cutter boat operations are among the most inherently dangerous activities conducted in the United States Coast Guard. The majority of cutter boat mishaps occur during launch or recovery. Additionally, the improper handling of equipment increases the risk of property damage and injury or death to personnel.

The WPC 154' and WPB 87' cutters are patrol boats designed to operate in the Coast Guard's offshore area of responsibility in support of the following missions:

- Ports, waterways, and coastal security (PWCS).
- Search and rescue (SAR).
- Drug interdiction (DRUG).
- Alien migrant interdiction operations (AMIO).
- Living marine resource (LMR).
- Other law enforcement (OLE).
- Defense readiness (DR).

In order to successfully perform these missions, it is imperative that SLR procedures be properly executed.

A.2. TTP Audience

This TTP publication is intended for use by all personnel engaged in or supervising SLR operations onboard WPC 154' and WPB 87' cutters.

A.3. General Safety

All safety requirements during SLR evolutions are per reference (a), Shipboard Launch and Recovery Procedures Manual, COMDTINST M3120.6 (series). This TTP publication is not a COMDTINST; it is a "how to" guide based on best practices. Therefore, it includes personnel responsibilities for conducting SLR operations aboard WPC 154' and WPB 87' cutters, addresses safety considerations, and provides overall guidance and procedures.

**A.4. Deviating
from the TTP**

This TTP publication cannot cover every SLR scenario that might arise. Operational circumstances can result in the need to deviate from guidance in this publication. Coast Guard members can deviate from the TTP as necessary to complete the task after a full assessment of the risks involved. Do not take deviations lightly. Temper any decision to deviate with maturity and a complete understanding of the mission, crew's capabilities, and equipment. Whenever possible, consult the cutter's commanding officer (CO) before deviation. Report TTP adjustment needs per the REQUEST FOR CHANGES paragraph in the letter of promulgation to allow for other units to benefit from newly learned best practices.

This TTP publication provides information tailored to the WPC 154' and WPB 87'. It includes more details than reference (a). Refer to this TTP publication for SLR operations.

Section B: Notes, Cautions, and Warnings

B.1. Overview The following definitions apply to notes, cautions, and warnings found in TTP publications.

NOTE: **An emphasized statement, procedure, or technique.**

CAUTION: **A procedure, technique, or action that, if not followed, carries the risk of equipment damage.**

WARNING: *A procedure, technique, or action that, if not followed, carries the risk of personnel injury or death.*

Chapter 2: General Information

Introduction

This chapter provides guidance to personnel engaged in the supervision and operation of SLR systems to assist in reducing the risk of injury or property damage.

In This Chapter

This chapter contains the following sections:

Section	Title	Page
A	Safety Requirements	2-2
B	SLR Shiphandling and Parameters	2-5
C	Standard	2-14
D	Personnel Roles	2-15
E	WPC 154' SLR System	2-17
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Section A: Safety Requirements

A.1. Overview To safely launch and recover cutter boats from a cutter requires the crew to execute a number of coordinated tasks involving teamwork, communications, and seamanship skills.

WARNING:

Reference (a), Shipboard Launch and Recovery Procedures Manual, COMDTINST M3120.6 (series), provides specific safety requirements that apply to SLR onboard cutters. Comply with all safety requirements while deploying and recovering cutter boats from the WPC 154' and WPB 87'.

A.2. Safety Briefs

Per reference (a), both command and individual team briefs must include a discussion of risk assessments, a clear sequence of events, and mission specific safety procedures.

WARNING:

Per reference (b), Operational Risk Management, COMDTINST 3500.3, units shall consider using the planning, event complexity, asset selection, communications, and environmental conditions (PEACE) model before the green, amber, red (GAR) model in order to identify hazards. Use the spread out, transfer, avoid, accept, and reduce (STAAR) model following the GAR for considerations on how to mitigate risk.

Command briefs typically include the following positions:

- CO/officer in charge (OIC).
- Officer of the deck (OOD).
- Safety observer (SO).
- Boat deck captain (BDC).
- Coxswain.
- Other essential personnel the CO/OIC deems necessary.

Individual team briefs include all personnel assigned to a team billet. Typically, the SLR team briefs include:

- SO.
- BDC.
- Deck seamen (DS).
- Additional members included on the Watch Quarter and Station Bill (WQSB) (coxswain, boat crew members, etc.).

NOTE:

At the discretion of the CO/OIC, if several SLR operations of short duration are planned, one brief and debrief is sufficient. However, if any briefing items changed during the evolution, address those items prior to continuing consecutive evolutions.

NOTE:

[Appendix B: Safety Brief](#) is the recommended format for a SLR evolution brief that can be amended to meet local needs.

A.3. Risk Management

Risk management (RM) models are part of SLR evolution planning and required during safety briefings. The SO and BDC play an important role in the communication of hazards to leadership. All members attending have input on SLR evolution risk assessment; however, the ultimate decision to conduct the evolution rests with the CO/OIC and the coxswain.

WARNING:

In higher sea states it is imperative that the stern gate not be raised until the crew is ready to deploy. This helps to minimize sea wash surging into the stern ramp which lifts and drops the cutter boat rapidly. Similarly, after the cutter boat is recovered, lower the stern gate as soon as possible. Night operations can present unusual or special challenges for cutter boat launch and recovery operations. Use the ship's installed lighting which is sufficient to partially illuminate the notch.

A.4. Passenger Transfer

Passengers are personnel embarked in cutter boats who are not boat crew personnel. This includes scheduled mission personnel such as boarding officers, boarding team members, SAR survivor(s), migrants, etc.

Due to the complexity of the issue, it is impossible to provide anything but general guidance to the operator and is in no way intended to limit on-scene initiative. Discretion is left to the CO/OIC in every circumstance.

1. The preferred practice is for passengers that are not part of the boat crew to disembark prior to boat recovery (due to insufficient personal protective equipment (PPE), proper seating, and to reduce boat weight).
2. The secondary method of passenger transfers is to ride the boat into the notch and disembark from a notched boat with the stern gate lowered.

WARNING:

Ensure the stern gate is lowered prior to allowing personnel to enter or depart from the cutter boat while in the notch.

A.5. Personal Protective Equipment

The use of PPE by all deck and boat crew is the first line of defense against injury. Adhere to proper PPE while performing SLR operations per reference (a), Shipboard Launch and Recovery Procedures Manual, COMDTINST M3120.6 (series), and reference (c), Rescue and Survival Systems Manual, COMDTINST M10470.10 (series).

WARNING:

Crewmembers sitting on the collar or forward of the boat console are subject to additional risk.

A.6. General Maintenance

The proper maintenance of equipment is necessary to avoid damage during SLR operations, as well as to ensure the safety of all personnel onboard. Maintenance procedure cards (MPCs), developed and promulgated through Surface Forces Logistics Center (SFLC) product line, provide detailed guidance on inspections for cutter boat appliances and lifting systems. [Refer to the Coast Guard Logistics Information Management System \(CG-LIMS\) Surface Technical Information](#) website for a list of standards, publications, and drawings that apply to SLR systems.

Additionally, an [Electronic Performance Support Solutions \(EPSS\)](#) containing a comprehensive description of all SLR equipment and associated maintenance is available for the WPC 154' and the WPB 87'.

Section B: SLR Shiphandling and Parameters

B.1. Overview

Among the many factors the CO/OIC takes into account are the specific operating characteristics of each cutter boat in relation to the prevailing weather/sea state. When missions require cutter boat operations in sea conditions exceeding the parameters set forth in pre-existing policy, CO/OICs conduct comprehensive launch/no-launch assessments. Guidance below serves as baseline considerations for cutter boat operations, but is not intended to limit the range of options available to the command in the conduct of the cutter's mission.

The sections that follow will discuss three primary components that pose challenges associated with SLR:

1. Ship motions at the stern, including sill depth, ramp availability time (pitch), and variability of water in the notch.
2. Cutter boat handling and maneuverability heavily influenced by recovery speed, propeller wash, and stern wake.
3. Coxswain skill level and experience.

All three of these factors play a vital role in successful SLR operations.

WARNING:

Exceed pitch and roll parameters only during urgent missions or with the explicit permission of the CO/OIC.

B.2. OOD

General Considerations

The OOD positions the cutter to not only minimize pitch and roll, but to also provide the optimal conditions for the coxswain at the cutter's transom and within the notch. In slight to moderate seas, this presents a "timing" challenge for the boat crew and the boat recovery detail.

Due to the circumstances noted above, the cutter operates to minimize vertical notch motions and water surging within the notch; therefore, cutter roll is not as critical as cutter pitch while performing SLR operations. The recommended seakeeping parameters are as follows:

- Consider both launch and recovery sea states when using stern launch. It is easier to launch the cutter boat in heavier seas than recover.
- Avoid coming down swell until the stern gate is lowered to prevent ocean surge in notch.

NOTE:

WPC 154' only: Best practice is for the OOD to place one or both throttles in the neutral position just prior to the cutter boat entering the notch. This reduces the prop wash and cavitation which can cause directional instability for the cutter boat. Cutter prop wash and cavitation can affect jet drive water intake impacting cutter boat performance.

- A significant limiting factor in boat recovery is stern gate height, and therefore pitch. Since the cutter's stern gate hinges vertically upward, as the cutter pitches up and down with the stern gate raised, it creates an overhead obstruction to the boat crew.

CAUTION:

Cutter boats are susceptible to potential damage while in the notch due to overtopping waves in elevated sea states, particularly when operating at low speeds in quartering or following seas. OODs need to carefully assess the effect of course changes on the fantail, and consider speed increases to prevent overtopping waves.

- The WPC 154' propulsion system creates a trough aft of the stern notch, as well as a standing wave whose location will move further aft as the cutter speed increases. Additionally, higher speeds cause the stern wake to become more aerated, which increases the likelihood of the boat water jet to lose thrust and maneuverability.

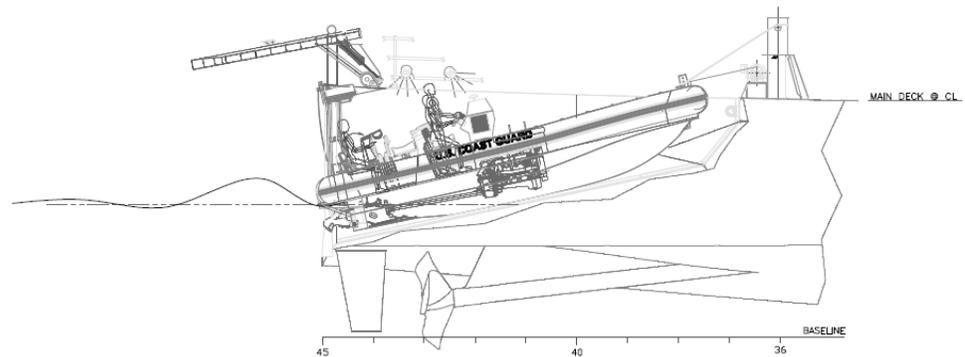


Figure 2-1 At higher speeds, stern wake may reduce stern gate clearance

CAUTION:

If launching a cutter boat is necessary while engaged in towing, consider delaying the launch until the tow is complete. However, if a launch is necessary, consider the following:

- 1) Tow line management, repositioning the tow line on the taff rail as necessary to safely launch and recover cutter boat.**

**B.3. Coxswain
General
Considerations**

Cutter Boat-Over the Horizon-IV (CB-OTH-IV): The most effective method for a coxswain to achieve a safe recovery in all sea states is as follows:

1. Close the distance to the notch and maintain a close distance (10-20 yards) prior to approach, vice a longer approach (25-50 yards). This distance allows the coxswain to make heading and position adjustments prior to entering the stern ramp.
2. Approach the cutter using a reasonable (generally 1-3 knots) relative approach speed and maintain a location 1-2 yards aft of the stern wave until ready to enter the notch.

NOTE:

Alignment with the stern ramp is important for a smooth recovery, however perfect alignment is not easy to maintain. When making the approach to the ramp, the natural tendency of a new coxswain is to over steer when correcting for yaw and sway due to turbulence at the stern.

3. Increase throttle at the threshold, as needed, to propel the cutter boat up the ramp incline.

CAUTION:

Excess throttle can cause damage to the cutter notch or the cutter boat.

Cutter Boat-Medium (CB-M): In contrast to the CB-OTH-IV, which can linger just behind the stern gate and race up the ramp of the WPC 154', the CB-M on the WPB 87' needs to start its approach several cutter boat lengths behind the stern gate. This approach distance is required to allow the CB-M to gain sufficient speed and momentum to climb the stern ramp for capture.

B.3.a. Additional Considerations

The following are additional general considerations for coxswains in order to properly conduct launch and recovery evolutions.

- Water jet-drives have the advantage of no projection below the hull to interfere with launch and recovery. The diesel engines have an added benefit of being able to run dry for short periods of time without causing engine damage.
- For the WPC 154', at cutter speeds above 7 knots, the coxswain experiences a suction effect on the cutter boat which effectively provides a low-pressure pull of the boat into the notch. The flow of water off of the port and starboard transoms helps to define the trough by providing lateral support towards the center of the sill. The benefit of the depression is effective up to significant wave heights of 4 feet. However, within a significant sea range from 4 to 8 feet, a point is reached where this suction effect will considerably decrease as the relative force of higher waves becomes more the dominant factor.
- It is critical that the coxswain take into account the motions of the stern gate for recovery; that is, attempt notching only during the most inactive periods when the motion of the stern ramp is minimal. This is best done in the vertical plane (i.e., pitch, heave) for the WPB 87' and in the horizontal plane (i.e., roll) for the WPC 154'.

WARNING:

Excess motions (i.e., pitch and roll and yaw) become too complex and present an unnecessary risk to the boat crew. Coxswains should examine conditions prior to notching.

B.4. WPC 154' Parameters

The WPC 154' class cutters are designed to conduct all missions, including SLR, through to a significant wave height of 8.2 feet (with an average period of 5.5 seconds). In calm seas (less than 3-4 feet) recoveries can be made at any heading, and can generally be conducted at slower speeds (5-6kts) clutch ahead on one engine only. In heavier seas (4-8 feet) SLR with the seas off of the beam is preferred. In seas excess of 8 feet, consider additional risk factor management.

The anti-roll fins on the WPC 154' are typically effective at speeds in excess of 9 knots, with seas on the beam or several points (11.25 degrees) fore or aft of the beam.

CAUTION:

Depending on sea state and cutter course, there is a cutter speed where stern notch fill and drain cycles are removed (i.e., the notch no longer fills and recedes with the swell, but retains a relatively steady sill depth). On the WPC 154', this typically occurs at 9 knots. Additional increases in speed may cause an undesirable "dry sill," which can cause extreme impact due to a dry landing.

WPB 154' Standard Weather Parameters

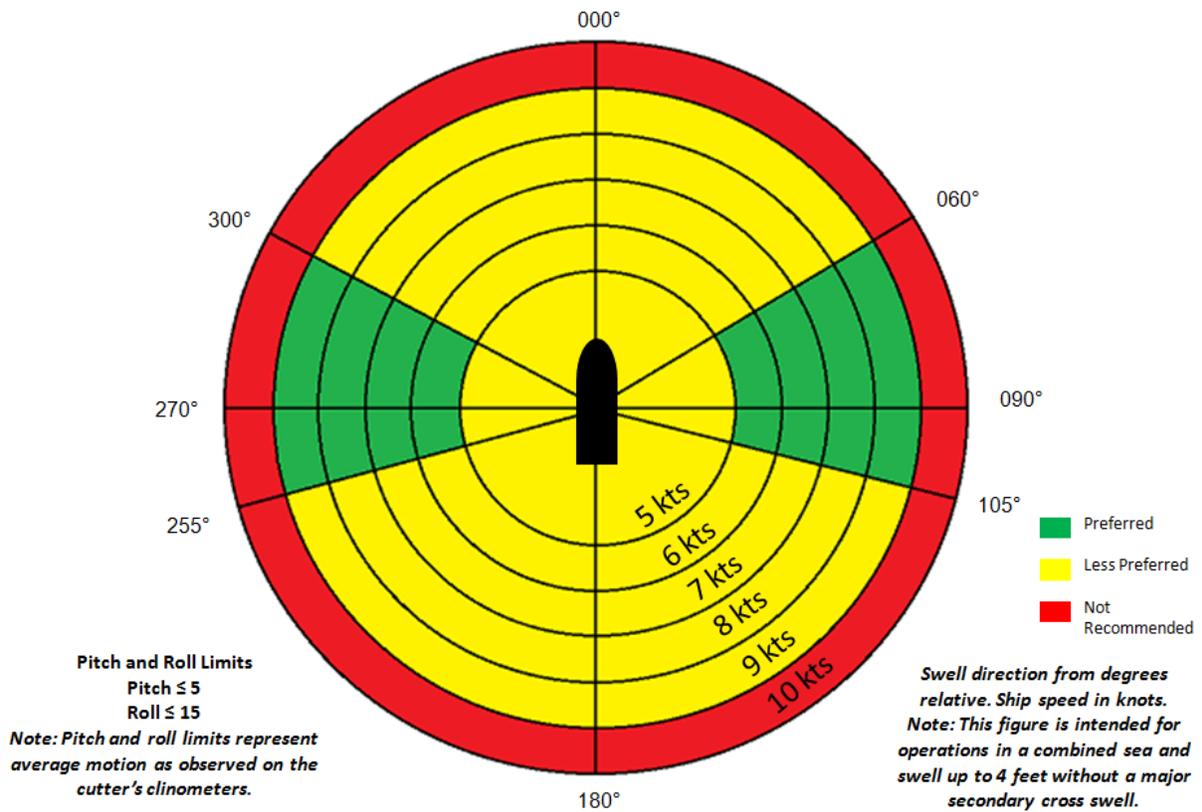


Figure 2-2 154' standard weather parameters

WARNING:

Exceed pitch and roll parameters only during urgent missions or with the explicit permission of the CO/OIC.

WPC 154' Heavy Weather Parameters

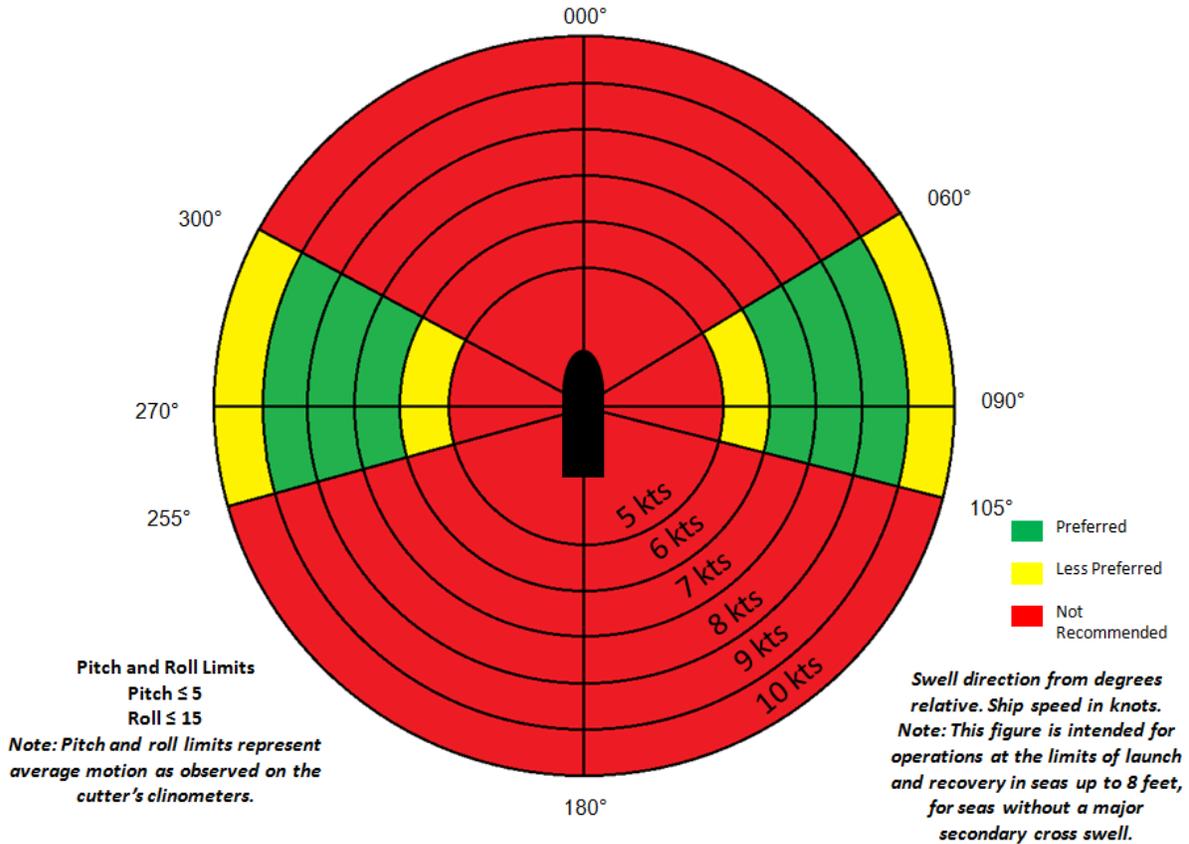


Figure 2-3 154' heavy weather parameters

NOTE: In calm sea states, SLR can occur across all relative sea directions. Figure 2-3 and Figure 2-5 were developed for use in heavy weather (limits of SLR parameters) only.

NOTE: Due to the complexity of managing cutter motions, units must find the speed that provides the best ride for on-scene conditions. Factors include swell period, mixed swells, excessive “heave” or surge in the notch, excessive wake due to ship speed, and pitch and roll. SFLC heavy weather testing has demonstrated a speed of 9 knots as effective across a range of sea states.

B.5. WPB 87' Parameters

The WPB 87' was designed to carry out all primary missions in conditions through 6 to 8 feet and cutter boat operations through to 6 feet.

CAUTION:

While the WPB 87' CB-M is rated for operations in up to 6 foot seas, launch and recovery becomes challenging in seas above 4.5 foot seas. In calm seas (less than 2 feet) an “into the seas” heading with a speed of less than 6 knots is ideal.

Unlike the WPC 154', the WPB 87' does not create a significant stern wake at the most optimal recovery speeds (approximately 4 knots). In all cases, it is important that the OOD adjust the cutter's heading and speed to find the most favorable wave encounter frequency to minimize pitch.

At significant wave heights in excess of 5 feet, cutters will encounter several challenging dynamics on headings other than those recommended, to include:

1. Bow Quartering Seas: A coupling of pitch and roll motions, producing “corkscrewing.”
2. Beam Seas: Excessive roll of the patrol boat in conjunction with prominent sway on the CB-M.
3. Stern Quartering Seas: Controllability issues with the CB-M cutter boat, i.e., surfriding and broaching risk.

WPB 87' Standard Weather Parameters

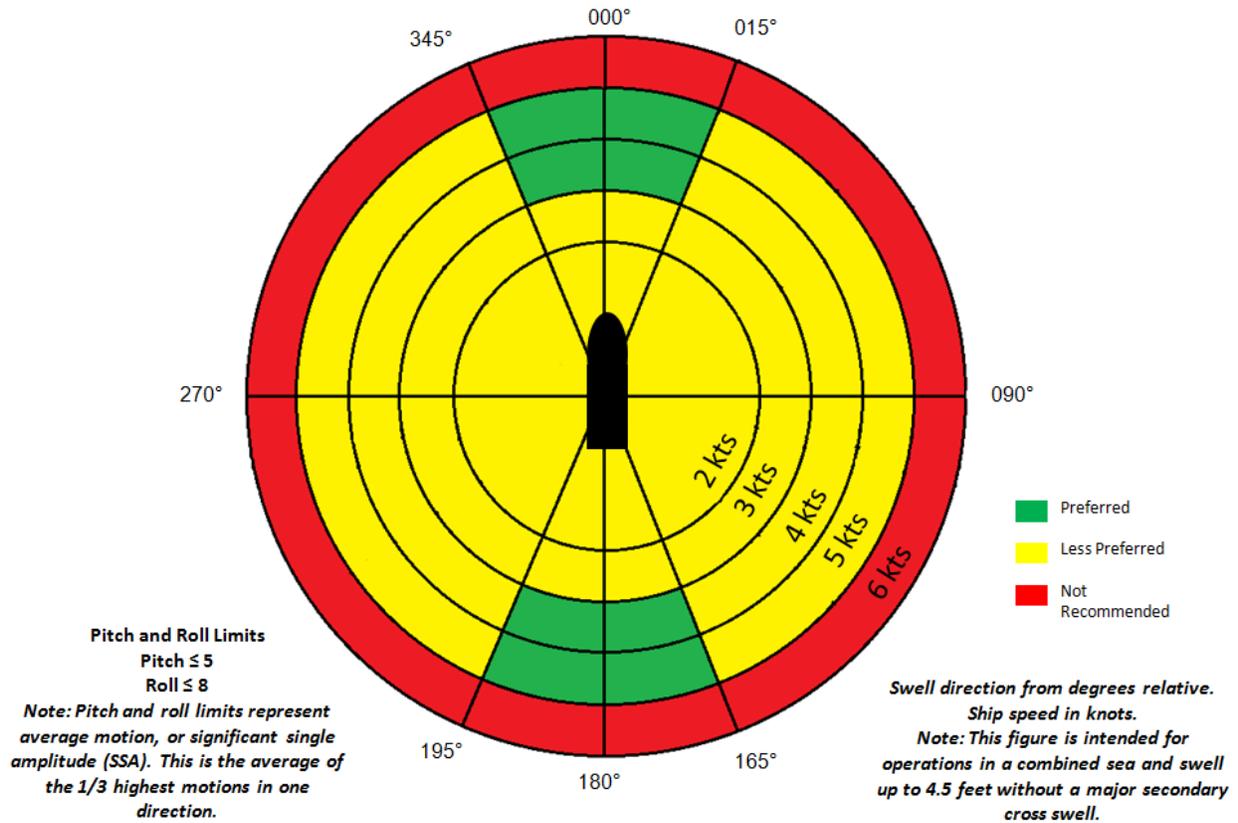


Figure 2-4 87' standard weather parameters

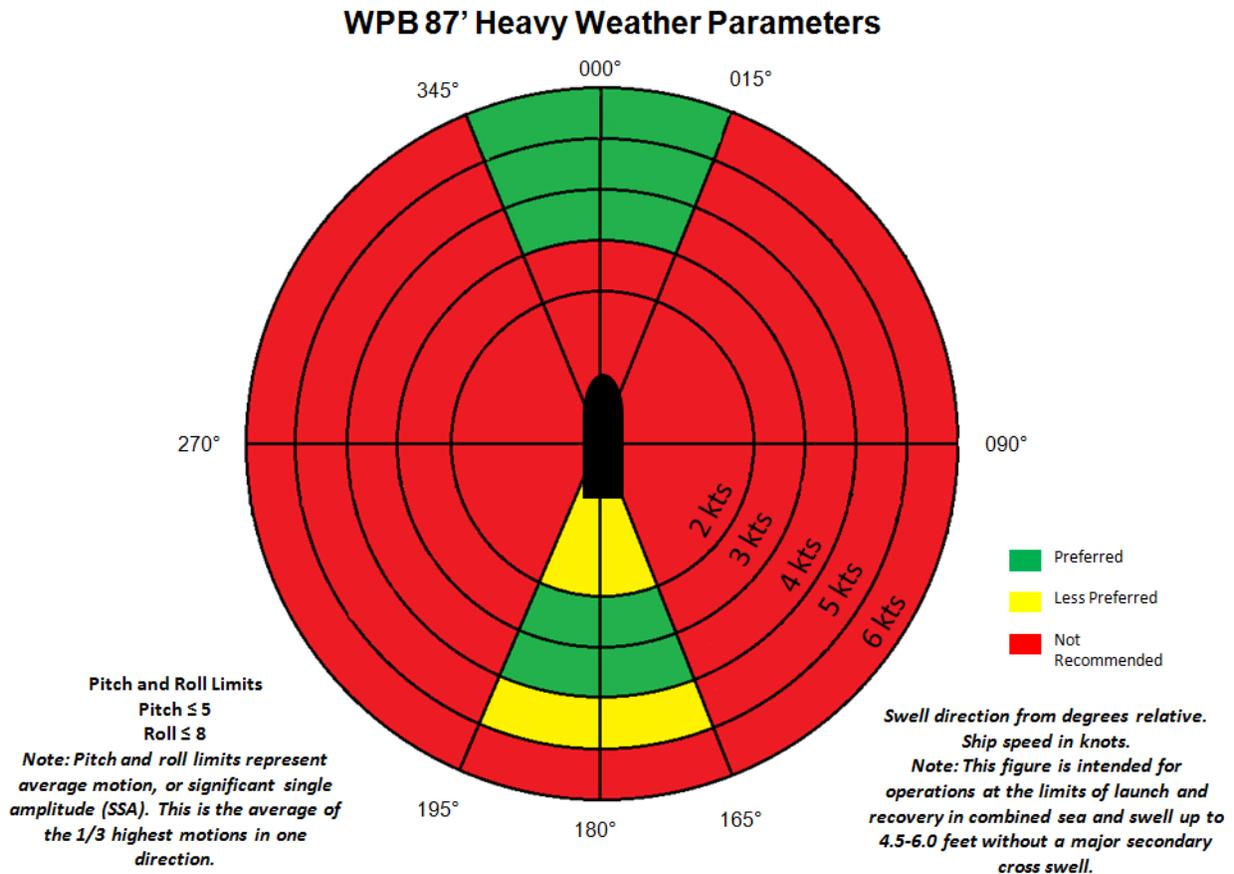


Figure 2-5 87' heavy weather parameters

NOTE:

Due to the complexity of managing cutter motions, units must find the speed that provides the best ride for on-scene conditions. Factors include swell period, mixed swells, excessive “heave” or surge in the notch, excessive wake due to ship speed, and pitch and roll. SFLC heavy weather testing has demonstrated that a speed of 4 knots is effective across a range of sea states.

CAUTION:

Depending on sea states and cutter course, there is a cutter speed where stern notch fill and drain cycles are removed (i.e., the notch no longer fills and recedes with the swell, but retains a relatively steady sill depth). On the WPB 87', this has been observed to occur at 9-10 knots. These cutter speeds may cause an undesirable “dry sill,” which can cause extreme impact accelerations due to a dry landing.

Section C: Standard Phrases

C.1. Overview

The following lists several standard phrases used by the CO/OIC, OOD, BDC, and coxswain during SLR operations.

C.2. Stern Commands

-
- **LAUNCH/RECOVER THE BOAT:** This is a command to launch or recover a manned and ready cutter boat. This command is restricted to the CO/OIC or to his or her authorized representative. Once authorized, the BDC can use the command in order to pull the quick release to launch the boat or to secure the boat via the winch.
 - **BOAT CREW LAY INTO/OUT OF THE BOAT:** BDC uses command to direct the boat crew to take assigned positions in a boat. Once manned and ready for launch, the standard report is “ready in the boat.”
 - **READY IN THE BOAT:** Communication relayed by the coxswain to boat deck. Command indicated coxswain and boat are ready to launch or recover (interferences removed, boat crew seated, etc.).
 - **RAISE/LOWER THE STERN GATE:** Command given from the bridge to raise the stern gate in preparation for launch.
 - **REMOVE THE PIN:** Order immediately following “ready in the boat.” Pin on the quick release hook removed.
 - **BOAT AWAY TO PORT/STARBOARD:** Report by the BDC to the OOD.
 - **BOAT HOOKED/MISSED:** Report from the BDC to the bridge.
 - **BOAT CREW ON DECK, REQUEST PERMISSION TO MAKE THE BOAT SECURE FOR SEA IN THE NOTCH:** This ensures bridge personnel consider the readiness status of the cutter boat.
 - **BOAT SECURE FOR SEA:** Command signifying that a boat is considered secured in the notch when the quick release shackle (QRS) is attached, safety pin reset, and the boat winched up in the notch.
-

Section D: Personnel Roles

D.1. Boat and Deck Crew Roles Below lists the personnel assignments and roles common throughout SLR operations. Personnel are to maintain required qualifications current per reference (a), Shipboard Launch and Recovery Manual, COMDTINST M3120.6 (series).

WARNING: *Take extra caution and perform extra risk analysis when using unqualified personnel (break-ins) during heavy weather operations.*

WARNING: *To reduce risk of mishaps, non-essential personnel should remain clear of the boat deck during launch and recovery operations.*

D.2. Commanding Officer/Officer in Charge The CO/OIC orders all SLR evolutions and is responsible for overseeing the entire operation.

D.3. Officer of the Deck The OOD is the CO/OIC's direct representative and is responsible for the overall safety and security of the cutter. The OOD maintains awareness and ensures proper conduct of all boat operations.

D.4. Safety Observer The SO is responsible for the overall safety of the SLR operation and is able to recognize unsafe conditions and report them immediately. The SO does not have any other assigned duties for the duration of the operation.

D.5. Boat Deck Captain The BDC is responsible for the execution of SLR operations. They do not operate in any other capacity than that assigned, unless emergencies require otherwise.

NOTE: **The BDC or a DS operates the winch.**

D.6. Coxswain Coxswains are in charge of the cutter boat and crew.

D.7. Boat Crew/Boat Engineer The boat crew/boat engineer safely performs their duties under the supervision of the coxswain on the cutter boat.

**D.8. Deck
Seaman**

The DS is proficient in the execution of SLR operations, and serves in various deck positions as directed (i.e., tending fenders, fender boards, pulling pins, winch operator, stern gate operator, etc.).

Section E: WPC 154' SLR System

E.1. Overview This chapter provides a general description of WPC 154' SLR equipment referenced elsewhere in this TTP publication. For more detailed descriptions, maintenance, and troubleshooting refer to the [CG-LIMS Surface Technical Information](#) website or the appropriate MPC.

E.1.a. Stern Notch The notch is located at the stern of the cutter. Bunks, contoured support structures, and guides control cutter boat positioning during capture and release.

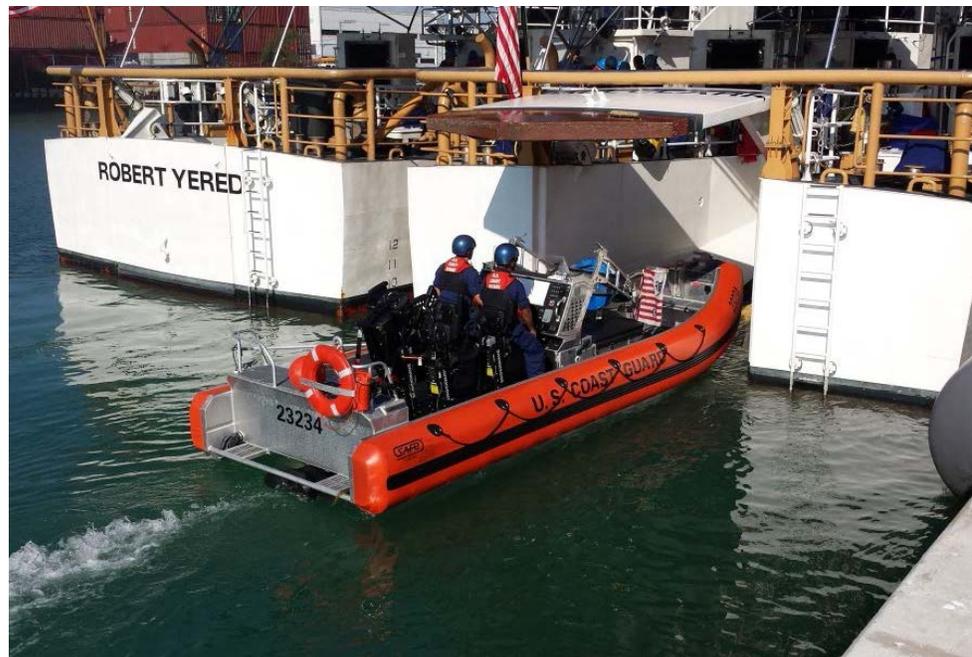


Figure 2-6 Stern notch

E.1.b. Stern Gate The purpose of the stern gate is to form a barrier between the notch and the exterior of the ship. The door is not watertight, but when lowered, reduces the flow of water into the notch.

NOTE: **Stern gate takes approximately 20 seconds to raise or lower.**

E.1.c. Stern Hydraulic Power Unit (HPU)

The stern hydraulic power unit (HPU) provides hydraulic pressure to raise and lower the stern gate and operate the winch. The HPU has an auxiliary connection to the independent fin stabilizer HPU as a backup.

CAUTION:

If the ambient temperature is below 32 degrees Fahrenheit (0 degrees Celsius), start the HPU and allow it to warm up before operating the stern gate cylinders or winch (e.g., 5 minute warm up).

E.1.d. Stern Gate Cylinders

Two double-acting cylinders are used to raise and lower the stern gate. The cylinders are constructed using corrosion resistant materials to resist corrosion in their exposed location. The cylinders receive hydraulic oil under pressure from the stern gate directional control valve mounted on the hydraulic power unit. Counterbalance valves are installed on each cylinder port to resist an uncontrolled lowering of the stern gate and promote smooth operation of the stern gate.

E.1.e. Hydraulic Winch

The hydraulic winch is powered by the stern HPU and has 60 feet of installed stainless steel cable, providing 47 feet of usable cable. The primary purpose of the winch is to haul the CB-OTH-IV into position when securing the boat for sea.

WARNING:

Due to the risk of winch failure or cable parting, always leave a minimum of five wraps of cable on the winch drum for proper cable retention. The first five wraps of cable on the drum is not usable for winch operation. Failure to do this has the potential to cause serious injury and equipment damage.

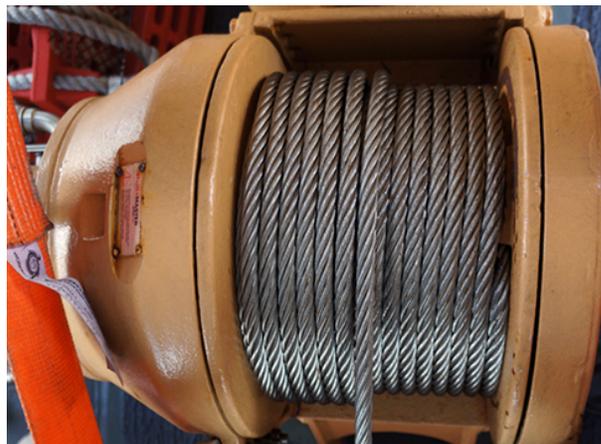


Figure 2-7 Winch

E.1.f. Electric Controls and Junction Boxes

The electrical controls and junction boxes include a [notch control panel](#), a [bridge control panel](#), and an [HPU junction box](#). Only the notch control panel has the ability to control the winch, while either control panel can raise and lower the stern gate. The HPU may be turned on and off via the start and stop push buttons on the notch control panel. The HPU can be stopped from any of the three panels in an emergency.



Figure 2-8 Notch control panel, bridge control panel, HPU junction box

E.1.g. Riding Strap

The riding strap is a nylon strap used to hold the CB-OTH-IV and take pressure off the hydraulic winch when the boat is secured for sea in the notch. The riding strap is shackled to welded pad-eyes on the cutter's tow bitt. When in place, the riding strap is looped under the bow horn on the CB-OTH-IV and the winch is paid out until the riding strap takes the full strain of the weight of the boat.



Figure 2-9 Riding strap

E.1.h. Sea Catch
Quick Release
Shackle

The sea catch QRS is used to attach the winch cable to the CB-OTH-IV and is designed to allow for safe and rapid release of the boat during launch. There is a safety pin that prevents accidental release of the CB-OTH-IV and a tag line attached to the release hook that enables the BDC or DS to release the CB-OTH-IV.

E.1.i. Catch Strap

The catch strap is a nylon strap attached to the horizontal posts on the tow bitt. It is lowered over the bow horn on the CB-OTH-IV during boat recovery.



Figure 2-10 Catch strap

E.1.j. Emergency
Stern Gate/Winch
Operation

The information below depicts situations that prompt an emergency raising and lowering of the stern gate and/or use of the hydraulic winch.

WARNING:

This section informs operators of the emergency capabilities of each launch and recovery system. It does not include the comprehensive level of detail needed to safely complete each operation per the technical publications located in the [CG-LIMS Surface Technical Information](#) website. As such, operators must refer to the appropriate technical publication and follow the step-by-step procedure.

Normal stop of stern door operation:

- Select the **Stop** button on the control panel.

HPU failure:

- In case of auxiliary HPU or hydraulic pump failure, hydraulic fluid may be supplied to the system via an auxiliary supply from the fin stabilizer HPU. In-line ball valves are located in the piping that normally isolate the auxiliary supply from the system.

WARNING:

Do not operate the HPUs for the fins and the launch and recovery simultaneously with the cross connect valve open. This results in the fin reservoir pumping oil into the launch and recovery reservoir and causing it to overflow.

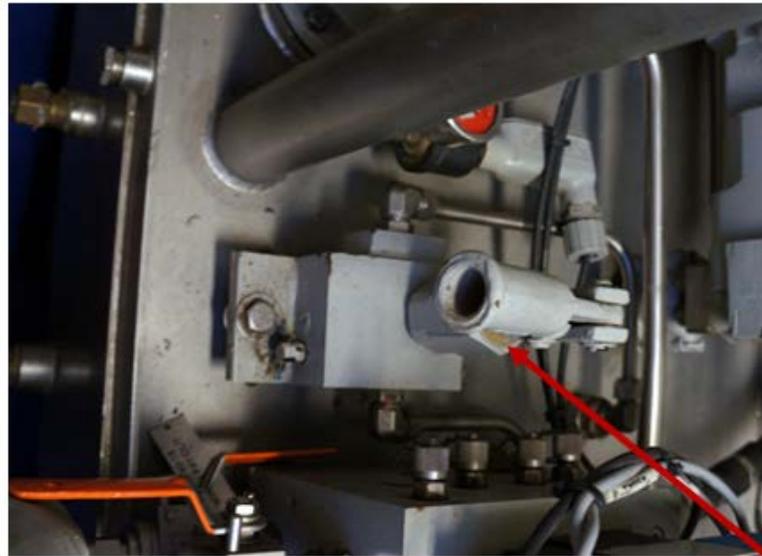
Auxiliary HPU failure and fin stabilizer HPU failure:

- In case of auxiliary HPU failure and the fin stabilizer HPU is not available, the auxiliary HPU is equipped with a back up lever operated hand pump. The hand pump can be used to actuate either the winch or the stern gate.

NOTE:

Although using the hand pump is an option to operate the winch, it is not practical in emergent situations, as it is slow.

- To operate the stern gate cylinders, one person depresses the appropriate **Raise** or **Lower** button on either the notch or bridge control panel and another person pumps the hand pump until the stern gate is fully raised or lowered.



Hand pump

Figure 2-11 Emergency hand pump

- If the winch is operational, the door cylinders can be disconnected at the pins and the winch cable routed over the towing rail and attached to the hook on the door.



Figure 2-12 Hook on stern door

Auxiliary HPU failure and fin stabilizer HPU failure, and ship's power failure:

- If electrical power is not present to operate the directional control valves, the manual override plungers can be depressed on either the winch or stern gate directional control valves in order to direct the oil to the winch or stern gate cylinders. Since the directional control valves are spring return to neutral, the manual override plungers must be continuously depressed while the hand pump is being operated in order for the winch or stern gate to move.

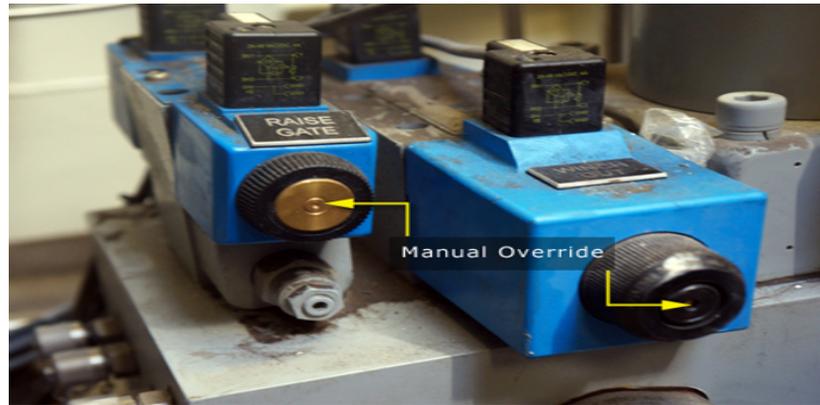


Figure 2-13 Manual override

Section F: WPB 87' SLR System

F.1. Overview This chapter provides a general description of WPB 87' SLR equipment referenced elsewhere in this TTP publication. For more detailed descriptions, maintenance, and troubleshooting, refer to the [CG-LIMS Surface Technical Information](#) website or the appropriate MPC.

F.1.a. Stern Notch The notch is located at the stern of the cutter. Bunks, contoured support structures, and guides control cutter boat positioning during capture and release.

F.1.b. Stern Gate The purpose of the stern gate is to form a barrier between the notch and the exterior of the ship. The door is not watertight, but when lowered, reduces the flow of water into the notch.



Figure 2-14 Stern gate

NOTE: The stern gate takes approximately 20 seconds to raise or lower.

F.1.c. Hydraulic System
The stern HPU provides hydraulic pressure to raise and lower the stern gate and operate the winch. The HPU has a dual pump with 450 volts of alternating current (VAC) motors that control both steering and the stern gate cylinders. In the event the HPU is inoperative, hydraulic pressure can be provided by a “one-time” use accumulator which has a nitrogen pre-charge.

F.1.d. Stern Gate Cylinders
Counter balance valves on the cylinders are used to prevent the door from falling from the raised position. These two cylinders are mounted on A-frame supports (port and starboard) at the main deck level because of the large size of the CB-M.

F.1.e. Hydraulic Winch
The winch has a 6,000 pound towing capacity and is powered by a ½ horsepower (HP) motor. The hydraulic winch system is significantly faster and more powerful than the previous electric winch system, and it does not allow for regulation of the in/out haul speed.

WARNING:

Due to the risk of winch failure or cable parting, always leave a minimum of five wraps of cable on the winch drum for proper cable retention. The first five wraps of cable on the drum is not usable for winch operation. Do not lift a load with a twisted, kinked, or damaged line. Failure to do this has the potential to cause serious injury and equipment damage.

CAUTION:

Ensure the CB-M is stowed in the notch with the weight of the boat on the riding chain and/or the catch strap.

CAUTION:

Controls are proportionally controlled. Rapid movement of the controls can cause shock loading of the load.

CAUTION:

The pressure in the brake housing must never exceed 100 pounds per square inch (psi) (7 bar gauge [BARG]). Excessive brake housing pressure causes the safety valve located on top of the motor to leak. Brake housing pressure can be gauged at the safety valve port.

CAUTION:

In low ambient temperatures, ensure the heater on the HPU is energized. The heater ensures the hydraulic oil is at operating temperature (80-150 degrees Fahrenheit).

F.1.f. Electric
Controls and
Junction Boxes

The electrical controls and junction boxes include a bridge control panel, a notch control panel, and an HPU junction box.

NOTE:

The secondary (non-steering related) HPU can only be turned off at the bridge and lazarette junction boxes, NOT at the notch control panel. There is no way to shut down the hydraulic system in an emergency from the notch panel.

F.1.g. Riding
Line/Strap

The riding line or strap is used to secure the cutter boat in the notch and take tension off the winch. It is recommended that cutters use a load-rated nylon strap or a 5/8 inch nylon line instead of a wire or chain. In the event of an abandon ship or other emergency, a nylon strap can be cut to free the cutter boat. See Coast Guard Drawing 87 WPB 583-001 RIB DEPLOYMENT STRUCTURE, Sheet 2, for standard configuration on the [CG-LIMS Surface Technical Information](#) website.

NOTE:

While best practices call for the use of a nylon line or strap, chains and wire ropes are still authorized.



Figure 2-15 Riding line/strap

F.1.h. Catch
Quick Release

The sea catch QRS is used to attach the winch cable to the CB-OTH-IV and is designed to allow for safe and rapid release of the boat during launch. There is a safety pin that prevents accidental release of the CB-OTH-IV and a tag line attached to the release hook that enables the BDC or DS to release the CB-OTH-IV.



Catch quick release

Figure 2-16 Catch quick release

F.1.i. Catch Strap

Use a nylon catch strap with a certified load rating to catch the cutter boat during the recovery process. Remove the catch strap once the boat has been fully raised in the notch using the winch and the safety line is secured.

CAUTION:

Only use mooring lines with eye splices as a “catch strap” when absolutely necessary because they have unknown specific breaking strengths and can cause damage to equipment.

F.1.j. Emergency
Stern Door
Operations

Due to the new secondary HPU system, the helm pump in the lazarette is only for the emergency steering system. The secondary system includes the anchor windlass, notch winch, and stern gate. The emergency stern gate operation is a one-time use nitrogen charged bottle that is activated from the main deck port side (located at approximately frame 23) from a closed control box with a pushbutton. The nitrogen bottle is located above the secondary HPU reservoir in the port side lazarette between frames 22 and 2.

NOTE:

Ship's force fills the nitrogen bottle after each use.

NOTE:

Refer to the applicable [EPSS](#) for the most current information on the emergency capabilities of each launch and recovery system.

Chapter 3: WPC 154' Launch and Recovery

Introduction

This chapter discusses the SLR of cutter boats via the stern notch for 154' class cutters. Step-by-step procedures describe actions taken by the OOD, BDC, coxswain, and DS during the evolution.

In This Chapter

This chapter contains the following sections:

Section	Title	Page
A	Launch	3-2
B	Recovery	3-5

Section A: Launch

A.1. Overview

This section delineates best practices for stern launch cutter boat evolutions.

A.2. Stern Launch

OOD:

- Pipe away the boat launch detail per CO's standing orders.
 - Ensure command, individual team briefs, and deliberate risk assessments are conducted (see [Appendix B: Safety Brief](#)).
 - Receive MANNED AND READY report from BDC.

BDC:

- Complete the following before reporting MANNED AND READY:
 - Establish communications with the bridge.
 - Ensure all personnel are on station and in proper PPE.
 - Conduct individual team briefings.
 - **BOAT CREW LAY INTO THE BOAT:** The BDC directs the boat crew to take assigned positions in the boat. Once manned and ready for launch, the standard report is **READY IN THE BOAT**.
 - Energize the HPU.
 - Inspect the hydraulic rams and the surrounding areas to ensure they are clear of obstructions, with safety pins removed.

Coxswain:

- Ensure cutter boat is ready for sea (i.e., pre-start checks, arch lowered, all antennas lowered, etc.).
- Conduct radio check with bridge.
- Ensure boat crew members and passengers are in proper PPE.
- Report when **READY IN THE BOAT**.

BDC:

- Use the winch to pull the cutter boat forward to release tension on the riding strap.

NOTE: Remove the riding strap only after the boat crew is seated.

- Direct a deck crewmember to remove the riding strap.



Figure 3-1 CB-OTH-IV on riding strap

CAUTION: In order to prevent damage to the cutter boat, ensure the boat is not winched up too far into the notch. Additionally, while notching, ensure the coxswain moderates speed upon recovery to prevent damage to the trailer eye bolt.

OOD:

- Ensure cutter is on a launch course at an appropriate speed.
- Obtain CO's permission to raise the stern gate and launch the cutter boat. Communicate permission to BDC.

BDC:

- RAISE STERN GATE: BDC or DS raises the stern gate.

WARNING: *Ensure that boat crew members are seated and ready to launch prior to raising the stern gate.*

WARNING:

In all sea states the CB-OTH-IV must lower its electronics arch prior to launch and recovery. Personnel must not sit on the engine hatch with the arch lowered. This prevents damage to the cutter boat and/or serious injuries to personnel.

Coxswain:

- Start the CB-OTH-IV before removal of the QRS safety pin.

NOTE:

The design of the CB-OTH-IV allows the engines to run dry for a maximum of 5 minutes.

WARNING:

Accidental early release is possible after removal of the QRS safety pin.

BDC:

- LAUNCH THE BOAT.
- Once permission is granted, remove the safety pin from the sea catch hook (BDC or DS).

Coxswain:

- Once in position, the coxswain indicates READY TO LAUNCH.

BDC/DS:

- Release the sea catch hook and the cutter boat slides out of the notch.

NOTE:

Keep stern gate lowered until ready to launch.

NOTE:

Experience and visuals from the coxswain play a significant role when backing out of the notch. Exercise caution if using a high throttle departure from the notch, as it depends on the conditions, coxswain experience, and guidance from the SO.

- Report BOAT AWAY TO PORT/STARBOARD, CLEAR OF THE STERN to OOD.

NOTE:

Lowering the stern gate after launching is recommended for other than short deployments.

- Report to OOD when STERN GATE IS LOWERED.

Launch complete.

Section B: Recovery

B.1. Overview The following delineates best practices for stern recovery evolutions.



Figure 3-2 154' stern recovery

NOTE:

The following assumes the cutter boat is within parameters for safe recovery.

**B.2. Stern
Recovery**

OOD:

- Pipe away the boat recovery detail per CO's standing orders.
- Assess the need for another deliberate risk assessment.

BDC:

- Complete the following before reporting MANNED AND READY:
 - Establish communications with the bridge.
 - All personnel in proper PPE.
 - Excess deck gear removed.
 - Ensure all necessary personnel are on station.

NOTE:

Ensure boat crew proper PPE is worn, and cutter boat mast/antennas are lowered.

- Energize HPU.
- Conduct functional test.

OOD:

- Receive MANNED AND READY report from BDC.
- Come to a recovery course and speed.
- Obtain CO's permission to raise stern gate and recover the cutter boat. Communicate permission to BDC.

CAUTION:

In a dry sill scenario, it is potentially challenging for the CB-OTH-IV to reach the catch strap. Changing speed or heading of the cutter (or both) allows enough water into the notch so the cutter boat can successfully engage the catch strap.

BDC:

- RAISE STERN GATE.

Coxswain:

- Lower the arch and antennas.
- Verify boat crew and passengers are in proper PPE.
- Request permission to notch from OOD.

OOD:

- Grants permission to coxswain and communicates permission to BDC to notch.

Coxswain:

- Acknowledges permission and makes approach to notch.

BDC/DS:

- Drop catch strap over the bow horn of the cutter boat.
- Reports successful or failed capture to OOD.

NOTE:

A best practice is to tie off two heaving lines to each side of the catch strap, have cutter personnel move the heaving lines aft of the stacks, suspend the catch strap over the notch, and stand ready to catch the cutter boat. When the coxswain attempts to notch, the cutter boat members with the heaving lines simply drop them when the bow is at the forward-most part of the notch.

NOTE:

During a failed recovery the coxswain must re-assess the situation, re-check recovery timing, and ensure he/she is still in step with the cutter.

- Pays out on winch and passes the QRS to cutter boat crew.

Boat crew:

- Move forward of the console.
- Obtain the QRS from a DS and attach to boat's bow.



Figure 3-3 CB-OTH-IV on catch strap

Coxswain:

- Secure the engine following a successful capture.

BDC:

- After boat crew is seated, heave around on the winch just until the riding strap can be placed around the bow horn.

CAUTION:

Do not pull the boat against the fender at the top of the notch, as this may overload and damage the cable.

- Lower the stern gate.
- Attach the riding strap.
- Pay out on the winch to take tension off winch cable and onto riding strap.
- BOAT CREW OUT OF THE BOAT.
- Report BOAT SECURE FOR SEA.

Recovery complete.

B.3. Emergency Recovery

In an emergency consider alternative solutions (i.e., towing cutter boat alongside).

However, due to unpredicted circumstances, some situations call for an emergency stern recovery. Examples are as follows:

- If the boat is dead in the water (DIW), recover the boat using either a mooring line or a tow line, using the aft capstan and the tow bitt.

WARNING:

In a protected area with light winds and calm seas, it is possible to recover via the winch. However, exercise caution, as even a slight amount of shock loading on the wire rope may part the line. In other than calm seas, take the CB-M into stern tow with the towing line, or a side tow with a sea-painter, and then to the nearest lee if possible.

- Inoperable winch, system intact: In the case of HPU or electrical system failure, the system is equipped with the means for emergency operations. In the case of auxiliary HPU or hydraulic pump failure, hydraulic fluid may be supplied to the system via an auxiliary supply from the fin stabilizer HPU. If the fin stabilizer HPU is inoperable, cutters also have the option of using the back-up lever operated hand pump located on the auxiliary HPU. See [Chapter 2: General Information, Section E.1.j: Emergency Stern Gate/Winch Operation](#) and the appropriate technical publication in the [CG-LIMS Surface Technical Information](#) website.
 - Inoperable and damaged winch: If the winch fails, recover the cutter boat using the fantail warping capstan and a series of blocks, slings, and shackles. Conduct deliberate risk assessments and examine all attachment (lifting) points to ensure they are able to handle the weight of the cutter boat.
-

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Chapter 4: WPB 87' Launch and Recovery

Introduction

This chapter discusses the SLR of cutter boats via the stern notch for WPB 87' cutters. Step-by-step procedures describe actions taken by the OOD, BDC, coxswain, and DS during the evolution.

In This Chapter

This chapter contains the following sections:

Section	Title	Page
A	Launch	4-2
B	Recovery	4-5

Section A: Launch

A.1. Overview This section delineates best practices for stern launch cutter boat evolutions.



Figure 4-1 WPB 87' stern launch

A.2. Stern Launch

OOD:

- Pipe away the boat launch detail per CO/OIC's standing orders.
- Energize HPU.

BDC:

- Complete pre-launch checks.
 - Establish communications with the bridge.
 - Ensure all personnel are in proper PPE.
 - Inspect the hydraulic rams to ensure they are clear of obstructions and leaks.
 - Disconnect hot starts, console cover, and any other ship specific items.

OOD/coxswain:

- Ensure command, individual team briefs, and deliberate risk assessments are conducted (see [Appendix B: Safety Brief](#)).

OOD:

- Come to a launch course.

BDC:

- Ensure boat crew members and passengers are in proper PPE.
- **BOAT CREW LAY INTO THE BOAT:** The BDC directs the boat crew to take assigned positions in the boat.

WARNING:

In order to prevent serious injuries to personnel, ensure that boat crew members are seated and ready to launch prior to raising the stern gate.

Coxswain:

- Conduct radio check with bridge.
- Once manned and ready for launch, the standard report is **READY IN THE BOAT.**

BDC:

- Report **MANNED AND READY** to the bridge.
- Request permission to raise the stern gate and launch the cutter boat.

CO/OIC:

- Grant permission to raise the stern gate and launch the cutter boat.

BDC:

- Raise stern gate and report **STERN GATE RAISED** to bridge.

NOTE:

To avoid damage to the motor, best practice is to secure the HPU when not in use.

WARNING:

Due to the potential for sea wash to surge into the stern notch, ensure boat crew members are seated and ready for launch whenever the stern gate is raised.

Crewmember:

- Safety strap (or riding chain) is removed by using the winch to remove tension on the line.

WARNING:

Remove pin and pass quick release tag to BDC. Accidental early release is possible after the QRS is removed.



Figure 4-2 CB-M standing by for launch

Coxswain:

- Light off the cutter boat.
- Obtain permission to launch the boat.

BDC:

- Pull quick release.
- Report BOAT AWAY TO PORT/STARBOARD, CLEAR OF THE STERN.

Launch complete.

Section B: Recovery

B.1. Overview The following delineates best practices for stern recovery evolutions.

NOTE:

The following assumes the cutter boat is within parameters for safe recovery.

**B.2. Stern
Recovery**

OOD:

- Pipe away the boat recovery detail per CO/OIC's standing orders.
- Come to a recovery course.
- Assess the need for another deliberate risk assessment.
- Receive MANNED AND READY report from BDC.
- Receive READY IN THE BOAT report from the coxswain.
- Obtain CO/OIC's permission before recovery.

BDC:

- Complete the following:
 - Establish communications with the bridge.
 - All personnel in proper PPE.
 - Excess deck gear removed.
 - Ensure all necessary personnel are on station.
 - Energize the HPU and conduct functional test.
- Report MANNED AND READY, REQUEST PERMISSION TO RAISE THE STERN GATE AND RECOVER THE CUTTER BOAT.
- RAISE STERN GATE.
- STERN GATE RAISED.
- BDC signals the coxswain indicating he or she is ready to recover.

NOTE:

Ensure boat crew proper PPE is worn, and cutter boat mast/antennas are lowered.

Coxswain:

- Receives indication that the cutter is ready for recovery.
- Returns the signal and starts approach.
- Secure the engine following a successful capture.

BDC/DS:

- Drop catch strap over the Sampson post of the cutter boat.
- BDC reports successful capture to the OOD (If unsuccessful report BOAT MISSED).
- PASS THE QUICK RELEASE. BDC passes winch line to cutter boat crew.

NOTE:

During a failed recovery the coxswain must re-assess the situation, re-check recovery timing, and ensure he/she is still in step with the cutter.



Figure 4-3 CB-M on the catch strap

- Ensure the cutter boat is winched in and chain gripe/safety strap is attached.
- Ensure tension is placed on chain/safety strap and not winch line.



Figure 4-4 Cutter boat secure in the notch

- Lower stern gate, and report STERN GATE LOWERED to OOD.
- Complete the following to ensure cutter boat is secure for sea:
 - Shore tie connected.
 - Protective coverings installed.
 - Any other required tasks.
- Report STERN GATE LOWERED to OOD.

Recovery complete.

B.3. Emergency Recovery

In an emergency consider alternative solutions (i.e., towing cutter boat alongside).

However, due to unpredicted circumstances, some situations call for an emergency stern recovery. Examples are as follows:

- If the CB-M is DIW, recover the boat using either a mooring line or a tow line, using the tow bitt.

WARNING:

In a protected area with light winds and calm seas, it is possible to recover via the winch. However, exercise caution, as even a slight amount of shock loading may part the line.

- If the winch fails, recover the cutter boat using a series of blocks, COME-ALONGS, etc.

WARNING:

Conduct deliberate risk assessments and examine all attachment (lifting) points to ensure they are able to handle the weight of the cutter boat.

WARNING:

In heavy weather, in the event of a DIW CB-M, never recover a cutter boat by passing the winch cable via heaving line for subsequent recovery via the winch. Surges may shockload and part the winch cable, or the cable may be caught in the screws. Instead, the CB-M should be taken into stern tow with the towing line, or a side tow with a sea-painter, and taken to the nearest lee if possible.

Appendix A: Acronyms

AMIO	Migrant interdiction.
BARG	Bar gauge.
BDC	Boat deck captain.
CB-M	Cutter Boat-Medium.
CB-OTH-IV	Cutter Boat-Over the Horizon-IV.
CG-LIMS	Coast Guard Logistics Information Management System.
CGTTP	Coast Guard tactics, techniques, and procedures.
CO	Commanding officer.
DIW	Dead in the water.
DR	Defense readiness.
DRUG	Drug interdiction.
DS	Deck seaman.
EPSS	Electronic Performance Support Solutions.
FC-P	FORCECOM TTP Division.
FORCECOM	Force Readiness Command.
GAR	Green amber red.
HP	Horsepower.

HPU	Hydraulic power unit.
LMR	Living marine resource.
MPC(s)	Maintenance procedure card(s).
OIC	Officer in charge.
OLE	Other law enforcement.
OOD	Officer of the deck.
PEACE	Planning, event complexity, asset selection, communications, and environmental conditions.
PPE	Personal protective equipment.
PSI	Pounds per square inch.
PWCS	Ports, waterways, and coastal security.
QRS	Quick release shackle.
RM	Risk management.
SAR	Search and rescue.
SFLC	Surface Forces Logistics Center.
SLR	Shipboard launch and recovery.
SO	Safety observer.
SSA	Significant single amplitude.
STAAR	Spread out, transfer, avoid, accept, and reduce.

TTP Tactics, techniques, and procedures.

VAC Volts of alternating current.

WQSB Watch Quarter and Station Bill.

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Appendix B: Safety Brief

The template on the following page is an example of an “Individual Team Brief” as defined in reference (a), the Shipboard Launch and Recovery Manual, COMDTINST 3120.6 (series). Typically, the SO uses this worksheet to brief the boat detail; it is separate from the coxswain’s Boat Movement Report.

Boat Launch and Recovery Operations Checklist

Location:	Date:
Personnel Assignments <i>(all must be certified per COMDTINST M3120.6 (series))</i>	
OOD:	Safety Observer:
Boat Deck Captain:	Deck Seaman:
Pre-Evolution <i>(all must be completed before commencing the evolution)</i> (Check box)	
<input type="checkbox"/>	Muster and conduct the Command Safety and Individual Team Briefs.
<input type="checkbox"/>	Conduct pre-evolution risk assessment per Operational Risk Management, COMDTINST 3500.3 (series).
GAR Model Risk Assessment	Risk Level (circle one) Green (0-27) Amber (28-49) Red (50-70)
Planning	Operating Area:
Equipment	Evaluate Risk vs. Gain (circle one) Risk > Gain = No go Gain > Risk = Mitigate Risk
Supervision	Options to mitigate risk Spread out, Transfer, Avoid, Accept, Reduce
Crew Selection	<ul style="list-style-type: none"> Discuss when to re-assess risk Discuss backup plan Discuss no-go criteria Discuss abort criteria Discuss escape options <ul style="list-style-type: none"> Equipment check (Cold & Hot; In Cold WX all equipment brought up to operating Temp?) PPE check (pyro, clothing, etc.) Radio check Discuss when stern door is opened/closed
Crew Fitness	
Environment	
Event Complexity	
Total	
<input type="checkbox"/>	Ensure all weight tests, inspections, and MPC are complete and up-to-date per SFLC Technical Standards 583 and 589.
<input type="checkbox"/>	Ensure boat checks have been completed and signed off by appropriate personnel.
<input type="checkbox"/>	Suitable current and forecasted environmental conditions are suitable for cutter boat.
<input type="checkbox"/>	Cutter pitch and roll suitable for launch and recovery operations.
<input type="checkbox"/>	Muster boat launch and recovery detail and boat crew; conduct team safety brief.
<input type="checkbox"/>	Ensure all personnel involved are wearing proper PPE, including the boat crew.
<input type="checkbox"/>	Establish communications between OOD, safety observer, BDC, coxswain, and DS.
<input type="checkbox"/>	Secure boat deck to all unnecessary personnel.
<input type="checkbox"/>	Notify OOD when manned and ready.
<input type="checkbox"/>	Obtain permission from the commanding officer before commencing operations.
Approval <i>(signature / time)</i>	
CO:	
Notes:	
During Evolution	
<input type="checkbox"/>	OOD monitor weather conditions; make appropriate reports to the commanding officer. Halt evolution if conditions deteriorate.
<input type="checkbox"/>	Log evolution start time, boat crew, other POB, GAR score in Deck Log.
Post-Evolution	
<input type="checkbox"/>	Log stop time in Deck Log.
<input type="checkbox"/>	Conduct debrief with participants. Record lessons learned.
<input type="checkbox"/>	Submit recommended changes to 1 st LT for review.

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