Lifeboatmen Notes

Gravity Davit with Enclosed Lifeboat and Davit Assisted Life Raft

Captain E. Mayhofer

Eighth Edition

Introduction to LB-0201

The prerequisite courses are MT-1111 Vessel Familiarization/ Basic Safety Training and ST-0999 Sea Term I

This is a practical assessment based course; we meet only 4 times throughout the semester. You will be assigned to a group which has four scheduled meeting times. The group leader will schedule practice at the academy waterfront for the “under oar” practical and organize transportation to Herring Pond where two of the practical demonstrations take place.

The “steer by magnetic compass” practical requires no preparation or studying. In this text, there are two sections explaining the following; “How the Under Oar Practical is Evaluated” and “How the Launching and Recovery Practical is Evaluated” and the syllabus, on page 6, indicates how to prepare for the LB-0201 final exam.

It will be up to you to practice and prepare to be successful. You will be given only one scheduled opportunity for each practical, unless you are a senior graduating this semester. Successful completion of LB-0201 is a prerequisite for sea term IV.

Table of Contents Page

Course Explaination…….....2

Table of Contents……..3-4

LB-0201 and LB-0202 Course Description……..5

LB-0201 Lifeboatmen Program Syllabus…….6

How the Under Oars Practical is Evaluated….....7-8

Boat Commands……...9-12

How the Launching and Recovery Practical is Evaluated…….…..13

Lifeboat Launching Steps…….14

Lifeboat Recovery Steps……...15

Lifesaving Equipment Box……...…16

Lifeboat Markings…….....17

Pictures and Descriptions of Steps in the Lifeboat Launching and Recovery Process…….....18-27

Starting the Lifeboat Engine in an Emergency….....28

Distress Call Format……..29

Supplemental Page(s) Content……...……30

Launching the Davit Assisted Life Raft Overview……...…31-32

Pictures and Descriptions of Steps in the Life Raft Launching Process……...33-42

Signaling Methods and Equipment……...43-56

Planning a Get Away or Landing with a Lifesaving Craft……....57-61

Suggested Undocking/ Docking Practice Scenarios at MMA Waterfront……62-65

Managing Survivors…….....66-67

Rotmar Hook…….…….....68-72

Sea Anchor…….…….....73-75

Sea Painter…….…….....76

Directions to MMA Docks at Herring Pond……...77-78

The "Lifeboatmen Program" at Massachusetts Maritime Academy has two parts:

LB-0201 STCW Lifeboat Training – – 0
Provides minimum standard of competence in survival craft and rescue boats other than fast rest rescue boats (Table A-VI/2-1). Launching: instruction and practical assessments to take charge of a lifeboat during and after launch using proper commands and safety methods; recover a lifeboat in water; steer and start engine; manage survivors. Rowing: instruction and practical assessments to manage a lifeboat after abandoning ship, using proper commands, lifeboat equipment and devices to aid in location.
Prerequisite: MT-1111, ST-0999 STCW: Practical

LB-0202 STCW Lifeboatman Exam – – 0
United States Coast Guard multiple choice exam to assess knowledge based competencies for lifeboat proficiencies.
Prerequisite: MT-1111, ST-0999 STCW: Knowledge

I recommend using Deck Officer Study Guide 7: Lifeboatman 2009 Paperback – January 1, 2009 by II Captain Joseph S. Murphy to help prepare for this exam

LB-0201 Lifeboatmen Program Syllabus

1. Practical demonstration “Under Oars”

2. Practical demonstration of:
   - Steering by Magnetic Compass
   - Deploying a sea anchor
   - Rigging a Search and Rescue Transponder (S.A.R.T.)
   - Demonstrating the use of a lifeboat radio
   - Emergency Position Indicating Radio Beacon (E.P.I.R. B.)

3. Practical demonstration of “Launching and Recovering” a lifeboat

4. Final Examination on the following topics:
   - Familiarity with survival craft equipment
   - Managing survivors
   - Signals for distress and signaling to attract attention
   - Starting a lifeboat engine
   - Sending a MAYDAY voice message
   - Devices used to aid in the location of a survival craft
   - Interpreting lifeboat markings
   - Deploying a sea anchor
   - Purpose of a sea painter
   - Lifesaving Signals
   -

**Assessments completed do not have an expiration date; only the assessments failed need to be attempted another semester.

**After the final exam, check the bulletin board outside of my office showing the results for the semester.

How the Under Oar Practical is Evaluated

Each coxswain shall tie on his or her sweep oar and will be evaluated on letting go, clearing the dock(s), rounding a designated buoy, approaching the dock, landing a crew member and making the boat fast with a bow and stern line. Make the approach to the dock with headway, landing on the monomoys fendering. A coxswain that collides “head on” onto the dock will immediately fail his/her assessment that day.

Evaluated on the following:

1. Maintains control of the boat
2. Anticipates effects of wind
3. Maintains good situational awareness; speed of approach, control of leeway, angle of approach
4. Uses clear commands ; the proper use of boat commands will facilitate efficiency
5. Approaches landing with bare steerageway
6. Displays ability to solve unanticipated problems
7. Displays confidence

Take a look at the “Planning a Get Away or Landing with a Lifesaving Craft section, I expect a "**head on**" approach.

Over many semesters, I have adopted a "black and white" pass/fail standard which has proven obtainable through practice. My standard consists of the following:

- The monomoy must land on the boats fendering; contact with the hull is unacceptable.
- With an "on the dock wind", the boat must not blow sideways for more than half a boat length.
- The bowman is not allowed to make an unsafe leap from the craft and redirect the craft for docking. The bowman can only place a line on a cleat, as directed by coxswain and not redirect motion of vessel.
- The boat must land with the bow nearly even with the end of the dock, with two fender contact.
- The bowman may provide some “dynamic fendering” only when one line is made fast.

- Each coxswain shall tie on his or her sweep oar before departing the dock and will not have an opportunity to re-tie during the undocking/docking evolution.

- You will be allowed a "bail out" one time if you determine that your approach is not working out as planned. On approach if the wind shifts or changes in velocity, so should your plan.

Practice sessions will be held at the MMA waterfront Monday- Thursday 1600-1730 (starting date and person to contact to be provided). The appointed group section leaders are responsible for scheduling group practice sessions. The key to success is PRACTICE! PRACTICE! PRACTICE!

See the section on "Planning a Get Away or Landing with a Lifesaving Craft"

Boat Commands

See "*The Cornell Manual for Lifeboatmen, Able Seamen, and Qualified Members of the Engine Department*" for additional information. I have defined some of these commands in my own words for better understanding.

Oars may be stowed along the port and starboard side of the boat with steering oar blade facing aft and the blades of the other oars facing forward. If the oars are stowed in the center of the boat, each bank when seated, should work together, moving one oar at a time, overhead, until oars are located along the outboard sides. Having the oars in the center allows for a safer, less cluttered embarkation and disembarkation. The two shorter oars are for the bowmen.

COMMAND	**ACTION**
STAND-BY-THE-OARS	Starting with the after 2 oarsmen, rowlocks are shipped, grasp handle of the oar with the inboard hand. Pick up the oar at the loom with the other hand, using an underhand grip. Lift the oar so that the loom rests on the gunwale forward, inboard of the rowlock. Two by two the procedure is followed working towards the bow.
OUT OARS	Place oars in row locks the from "STAND BY THE OARS" position. Looms perpendicular the boat's centerline and blades flat trimmed fore and aft.
STAND BY TO GIVE WAY	This command should precede the "Give Way Together" command. Rowers extend arms and lean aft, pushing the blades forward and slightly dipped ready for an instant start.

GIVE WAY TOGETHER Stroke started, at end of stroke, blades are feathered fore and aft and pushed forward, and another stroke is made.

OARS Complete the stroke, stop rowing, and hold blades flat trimmed fore and aft.

BOAT THE OARS This command should be preceded from the "OARS" command. Starting from the bow 2x2 oarsmen stow their oars alongside the gunwhale and remove the rowlock.

GIVE WAY PORT, BACKWATER STARBOARD

This order is given to turn the boat without making way ahead or astern. This maneuver creates a short radius turn.

GIVE WAY PORT, **HOLD WATER STARBOARD**

This order is given to turn the boat with slight headway. This maneuver creates a medium radius turn.

HOLD WATER Complete the stroke, stop rowing, and dip blade about half way into the water and hold water to stop the way of the boat.

STAND BY TO BACKWATER

This command should precede the “Backwater all” command. Rowers bring handles close to chest, pushing the blades aft, leaning forward, blades slightly dipped ready to push aft for an instant start.

BACK WATER ALL From the command "OARS," commence to row in astern motion.

SHOVE OFF Inboard bowman shoves off smartly from the dock or ship's side with the blunt end of the boat hook.

IN BOWS The bowmen complete the stroke, swing their oars forward and boat the oars, then stand-by with boat hook or to receive the sea painter or boat rope.

BANK OARS Draw the oars through the rowlock until the handles rest on the opposite gunwale. It is given from the command "OARS"

UP OARS The oars are tossed quickly into a vertical position, blades trimmed in a fore and aft plane and in line with that of the stroke oar; handles of oars resting on the bottom boards.

LET FALL At this command all oars are dropped, blades outboard, into the rowlock. Use the crook of your outboard arm to guide/control the loom outward. Slip the inboard hand to the handle and come to the position "OARS".

WAY ENOUGH Given as the boat approaches for a landing, and takes the place of the two commands "oars" and "boat oars." The command is given at the beginning of a stroke. The stroke is completed, oars tossed to about 45 degree angle and boated, forward oar first, stroke oar last. The rowlock is unshipped.

How the Launching and Recovery Practical is Evaluated

This practical demonstration will be executed in groups of three. All of the steps and terms listed on the following pages must be included in your practical demonstration. During this exercise the “sea painter tender” and the “coxswain” will be imaginary individuals; the lifeboat officer will be assisted by a “brakeman”. Become familiar with all information in this text which pertains to launching and recovering a lifeboat; you may be asked to explain, for example, “how to bypass the hydrostatic indicator”. Each individual tests separately, if a step is missed or explained incorrectly and the assistant(s) does not know the correct answer when asked, he or she will receive “one wrong” as well. To successfully complete the “Lifeboat Launching and Recovery Practical”, individuals must have a thorough understanding of the launching and recovery steps listed above as well as any information contained in the “Pictures and Descriptions of Steps in the Lifeboat Launching and Recovery Process” section of this booklet.

2x = (2 steps incorrectly demonstrated or described) cadet will need to redo this practical demonstration.

If an individual, whether the boat officer or person assisting, is determined to be unfamiliar with any of the equipment mentioned, he or she will automatically fail.

Lifeboat Launching

Include the following steps in your presentation:

1. Start by stating the abandon ship signal (more than 6 short blasts followed by 1 long)
2. A muster will be taken
3. The sea painter led forward and tended
4. Instruct the Coxswain to enter boat, insert boat plug(s) and put on seatbelt (receive acknowledgement)
5. Instruct Brakeman to remove fore and after safety bars (receive acknowledgement)
6. Instruct Brakeman to release span wire (receive acknowledgement)
7. Instruct Brakeman to assist passengers into the lifeboat and to put on seatbelts (receive acknowledgement)
8. Pass the word to have Coxswain start the lifeboat engine
9. Instruct Brakeman to secure hatch
10. Instruct Brakeman to stand by the brake
11. Instruct Brakeman to watch my signals for lowering
12. The Boat Officer stops lowering when the falls are slack and receives word that the hydrostatic indicator is in the red
13. The embarkation ladder is lowered so that Brakeman, Sea Painter Tender and Boat Officer may board lifeboat and secure their seatbelts
14. The Coxswain removes safety pin and pulls releasing gear lever
15. The Coxswain begins motoring away
16. The Coxswain releases sea painter

***NOTE… THIS PROCEDURE OUTLINES THE LAUNCHING OF THE MMA PIERSIDE ENCLOSED LIFEBOAT. IF THE REMOTE WINCH BRAKE RELEASE IS USED FOR LOWERING NO ONE WOULD BE LEFT TOPSIDE; THEREFORE PROCEDURES WOULD BE SLIGHTLY DIFFERENT. IT WILL BE NECESSARY TO BECOME FAMILIAR WITH THE EQUIPMENT ABOARD YOUR VESSEL.TAKE THE TIME TO UNDERSTAND THE IMPORTANT DIFFERENCES.**

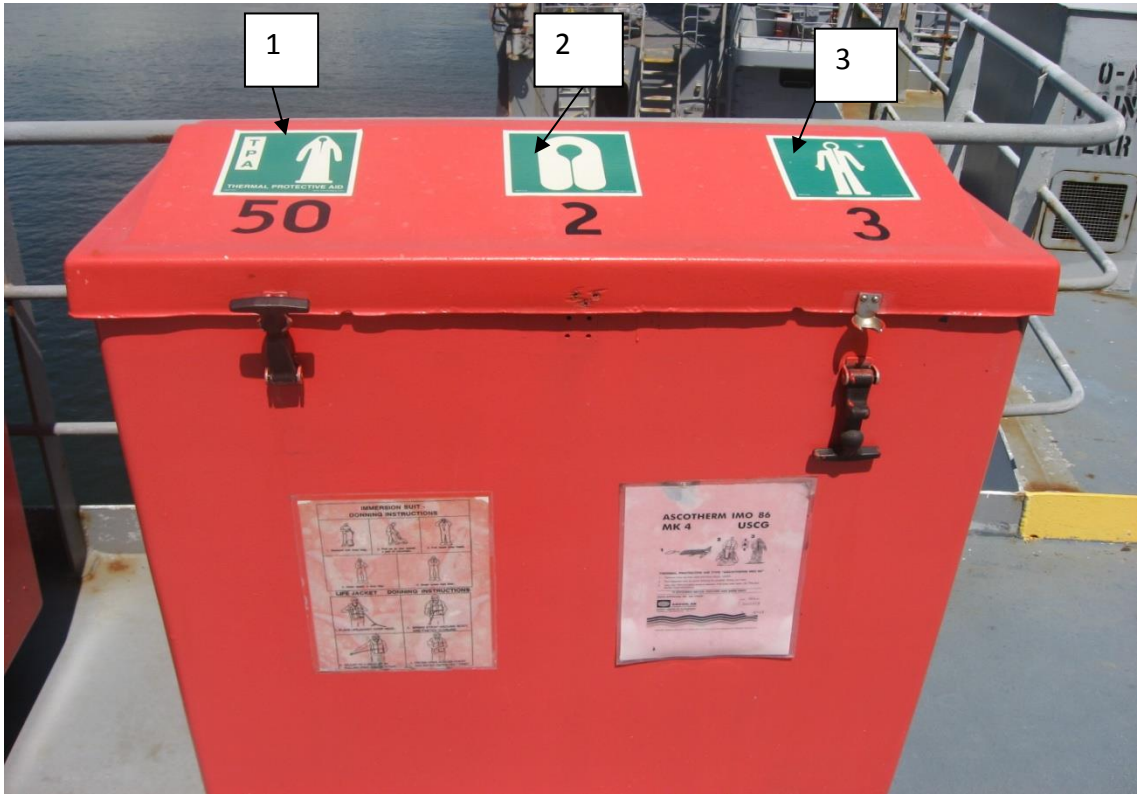
****NOTE… THE SAFETY BARS ON THE KENNEDY'S LIFEBOAT DAVITS ARE REMOVED WHEN THE SHIP IS UNDERWAY. THESE SAFETY BARS ARE ONLY EMPLOYED DURING THE MANY MONTHS OF LAYUP AS AN ADDITIONAL SAFETY MEASURE AND MUST BE REMOVED BEFORE LEAVING THE DOCK.**

Lifeboat Recovery

Include the following steps in your presentation:

1. Before returning to ship, reset Rotmar hooks
2. Before returning to ship, reset Releasing gear lever
3. Visually and physically check that each Rotmar hook is locked down
4. Reconnect painter or tie up to ship with a bow and stern line
5. Connect falls to Rotmar hooks by passing the ring through the preventer bars
6. Disembark via the embarkation ladder
7. Hoist easy, ensuring that the falls are not fouled
8. Continue to hoist testing all 3 limit switches
9. Stop hoisting by power before limit switches are engaged
10. Power off
11. Insert hand crank and crank davit arms up against upper davit stop
12. Secure safety bars fore and aft
13. Secure span wire
14. Secure fore and after gripes
15. Remove boat plug

***NOTE…THE DAVITS ARE SECURED FOR SEA WHEN THEY ARE UP AGAINST THE UPPER DAVIT STOP AND THE SPAN WIRE IS RESECURED. THIS PROCEDURE DOES NOT ALLOW THE DAVITS TO MOVE AND ARE THEREFORE SECURE FOR SEA. THE GRIPES HOLD THE LIFEBOAT IN TIGHT AGAINST THE BOAT SPARS. THE GRIPE TURNBUCKLES WILL NEED TO BE SLACKED BEFORE RESECURING THE GRIPES.**



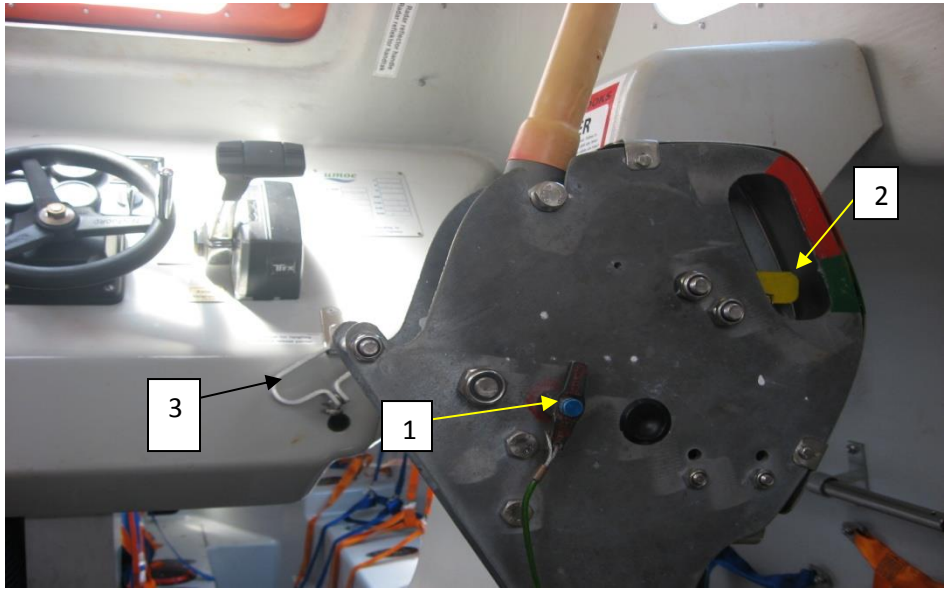
Here is an example of a lifesaving equipment box located near a lifeboat or life raft boarding area. The station bill should designate a person to pass out this equipment

1. Indicates the number of **T**hermal **P**rotective **A**ids in this box
2. Indicates the number of lifejackets in this box
3. Indicates the number of survival suits in this box

1. Each side of each lifeboat bow must be marked in block capital letters and numbers with the name of the vessel. The name of the hailing port is required to be marked on the stern

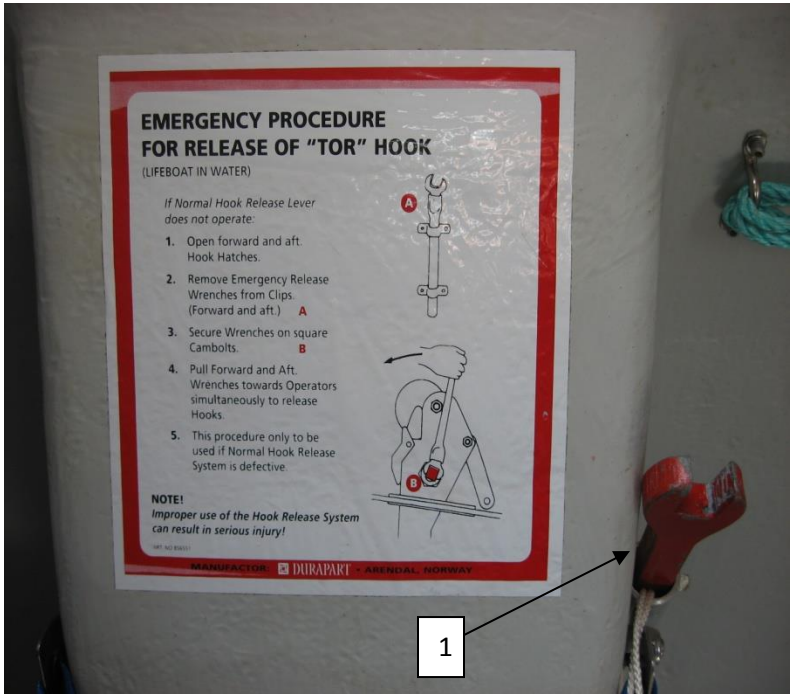
2. The number of persons for which the boat is equipped must be clearly marked, preferably on the bow

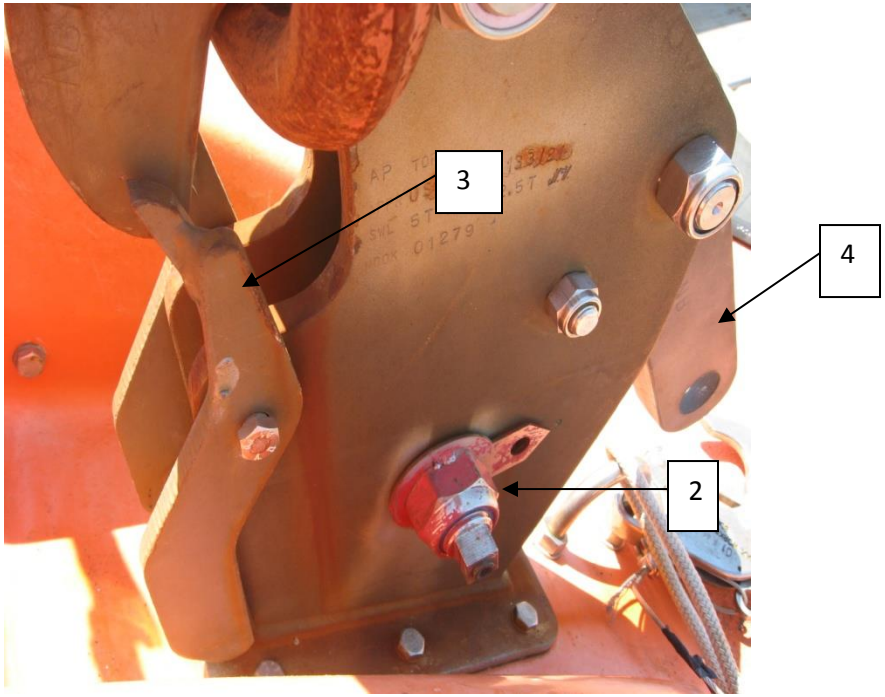
3. The number of the boat and a means of identifying the vessel to which the boat belongs, such as the vessel's name, must be plainly marked or painted so that the markings are visible from above the boat



Rotmar Releasing Lever

1. Removing the safety pin allows the lever to be pulled
2. The hydrostatic indicator has a yellow pointer. When pointing at "green" this indicates that the boat is not in the water and will not allow the lever to be pulled. The yellow pointer in the red area indicates boat is in the water and ready to release
   If the hydrostatic indicator is malfunctioning and the boat is in fact in the water, the malfunctioning hydrostatic indicator must be bypassed so the releasing gear lever can be pulled. This is accomplished by holding the yellow arrow into the red area and at the same time pulling the releasing gear lever up out of the notch and down
3. Coxswain will pull this handle to release the sea painter



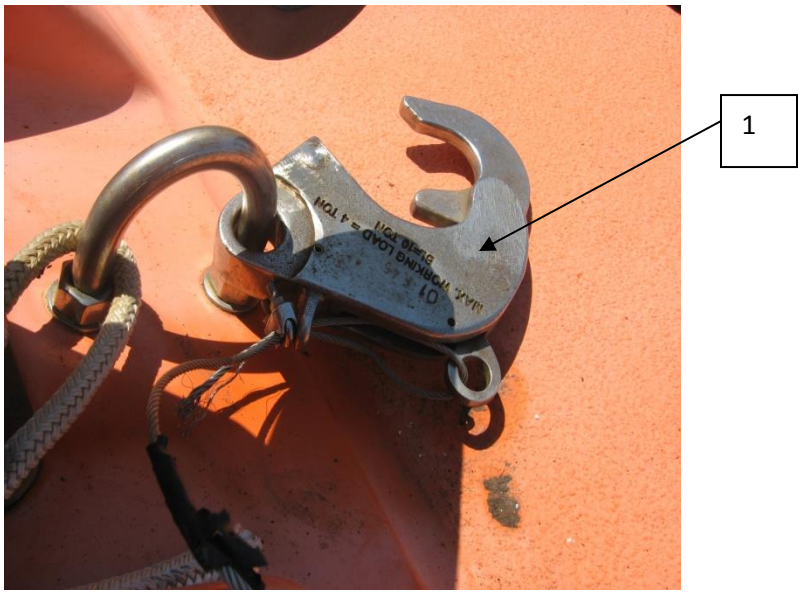


1. If the normal releasing gear lever does not function because of a linkage problem, the Rotmar hooks may be released individually with these wrenches, which are placed at both ends of the vessel. Follow the instructions on the placard

2. This is where the wrench is placed. Notice the arrow is in the horizontal position ,this indicates that the hook is locked down

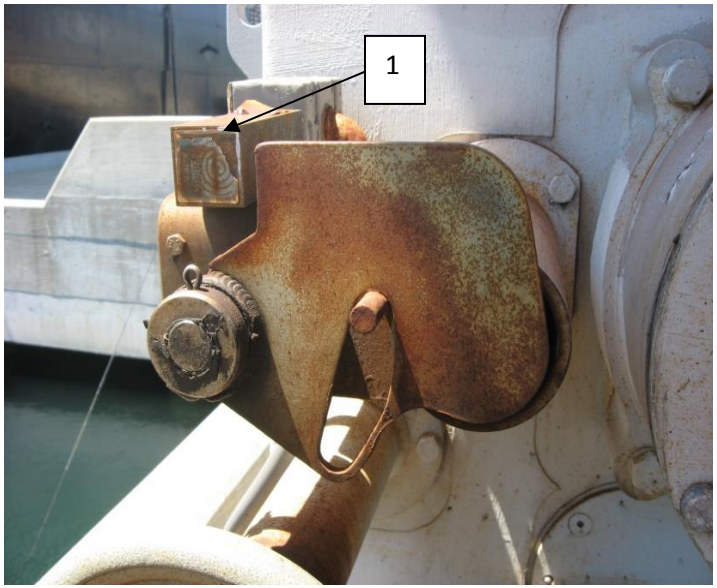
3. The preventer bar allows the ring, attached to the falls, to be placed into the Rotmar hook and not fall out

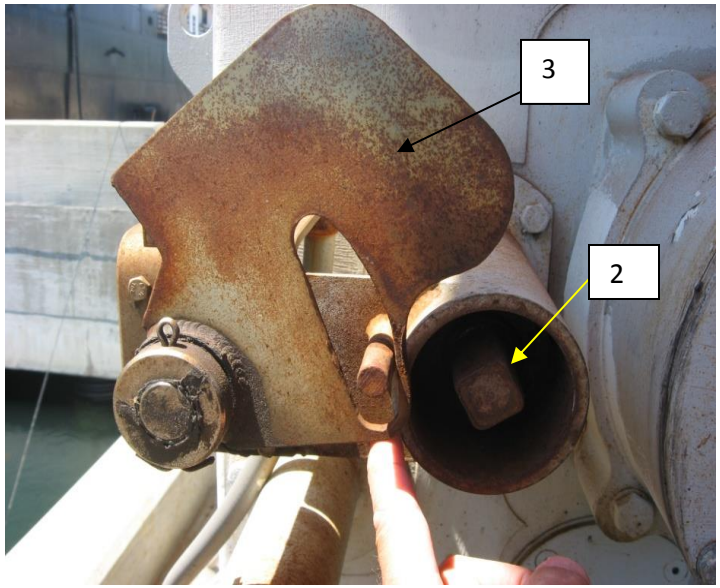
4. This lifting eye may be used during shipyard for lifeboat extraction



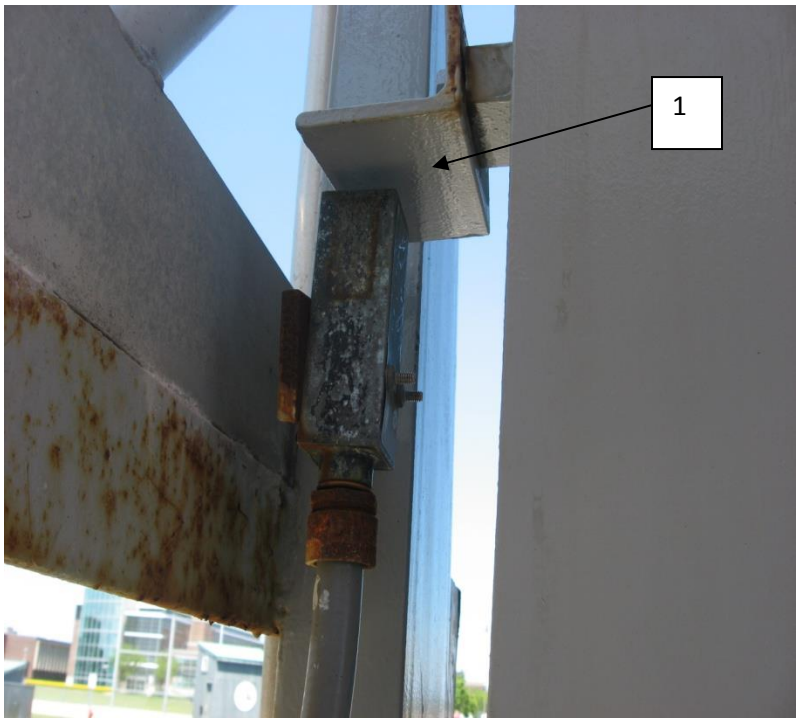
Here is a **sea painter releasing hook (1**), one example of how a sea painter may be fastened to allow for quick removal. Notice the wire connected to the hooks releasing mechanism. This wire leads back to the Coxswains control area; the Coxswain is the individual that releases the sea painter.

When recovering the lifeboat and attempting to connect the falls to the Rotmar hook, further slack in the falls may be needed. Normally when the **brake (1)** is picked up, the falls will pay out; but without weight on the falls it will be necessary to rotate the **hand wheel (2)** while the brake is held up to attain the needed slack.



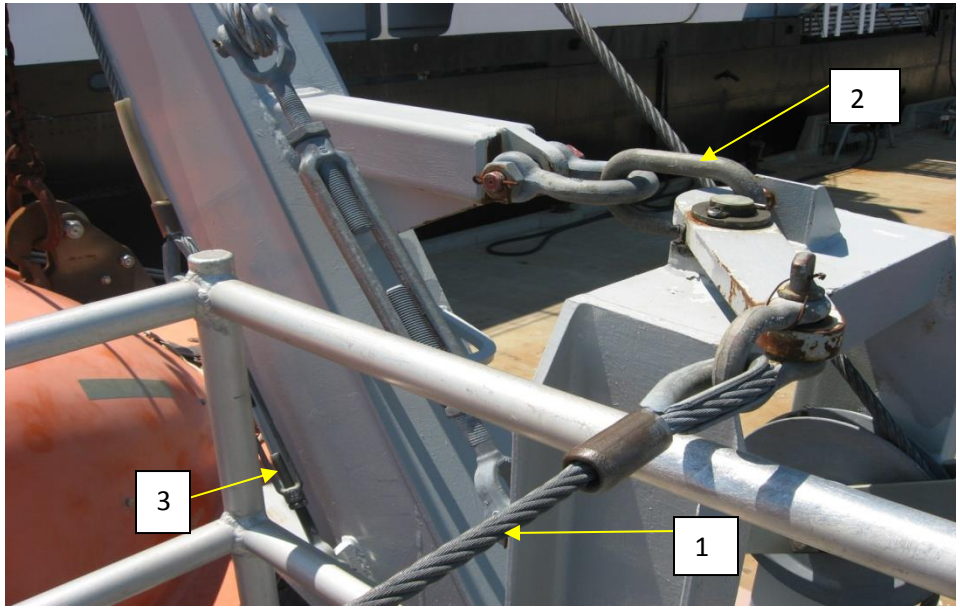


1. This shows a limit switch which is activated when the hand crank is inserted. This will not allow the power to be activated when the hand crank is being used.
2. Where hand crank is inserted
3. Pivoting steel blind which activates limit switch



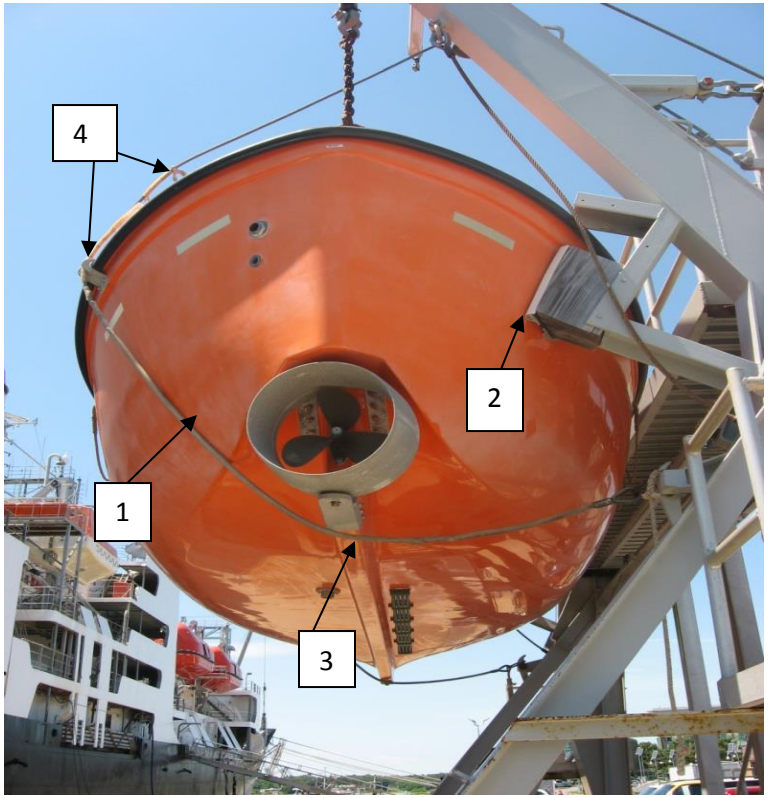
The power should be secured before the limit switch is engaged. This is a best safety practice, which does not use the limit switch to stop the travel of the davit arms. By visual inspection, stop hoisting by power when the **piece of angle iron (1)**, which activates the limit switch, is close to passing over the top of the limit switch. In this photo, the angle iron has passed over the top of the limit switch. Position yourself properly so that you can see when to stop hoisting by power.

Photo of a davit up tight against the **upper davit stop (1)**. In this position the davit travel inward is stopped.



A properly secured **span wire (1)** does not allow the davits to travel outward. Notice the **linkage (2)** which must be reconnected for the span wire to be secured properly.

Notice that there are two turnbuckles in the photo. The **gripe turnbuckle (3)** is connected to the gripe and the other turnbuckle should not be touched; this turnbuckle affects the length of the falls.



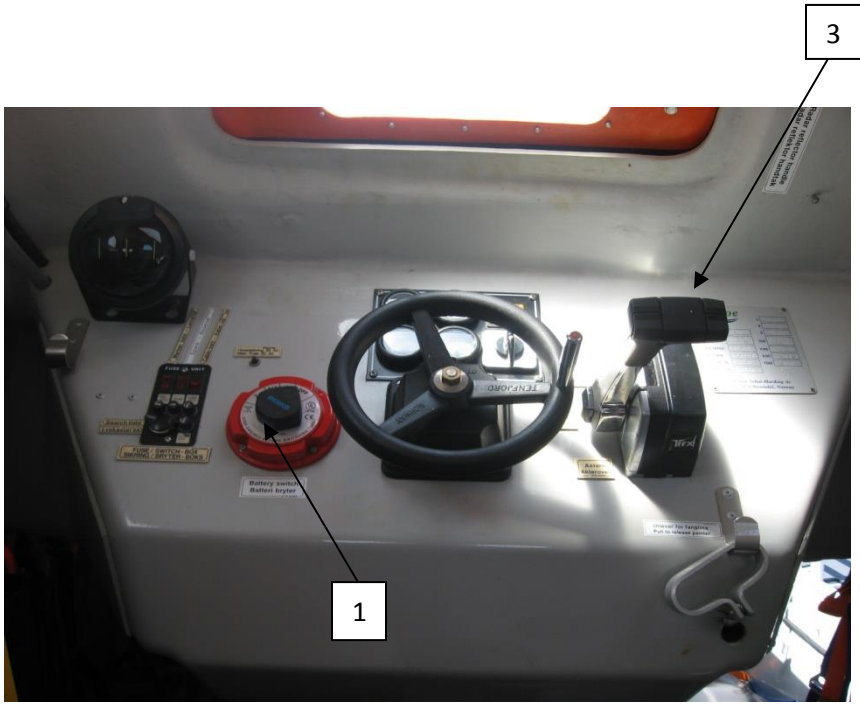
If it were not for the **gripes (1)** the lifeboat would swing from falls like a pendulum.

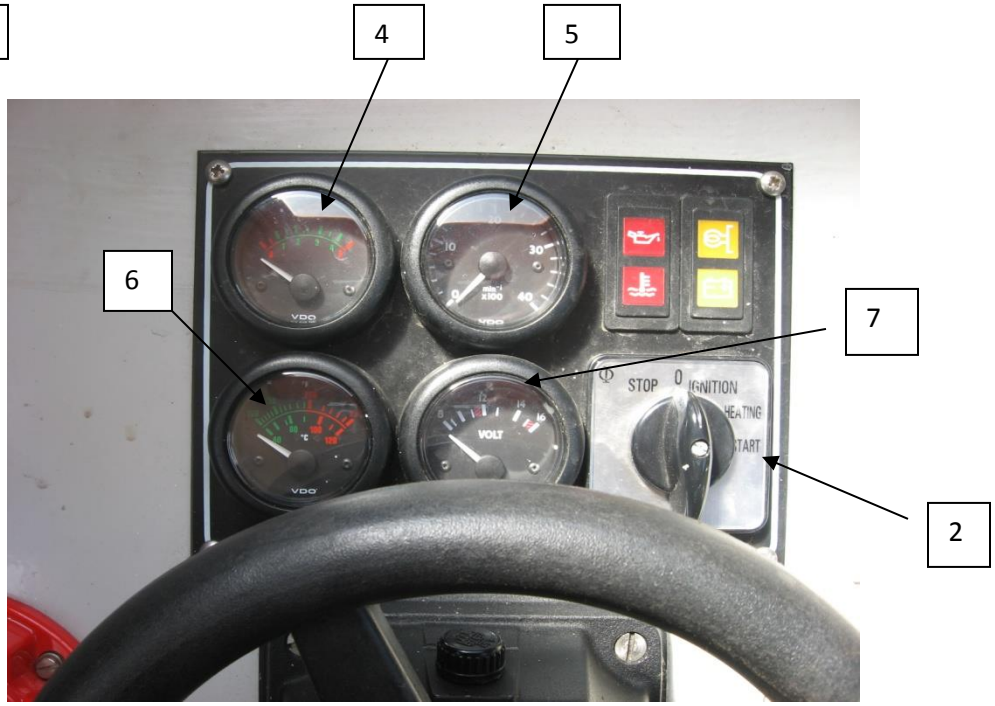
The **boat spar (2)** with pudding is what the lifeboat is pulled tight against when the gripes are tightened.

The gripes must pass under **the keel (3)** and be placed in both **gripe keepers (4)** ,fore and aft, before tightening the gripes.

Wait until both gripes are secured before tightening; tighten both turnbuckles together

Turnbuckles on the span wire and gripes allow these wires to be lengthened and shortened. When recovering a lifeboat and reconnecting the span wire and gripes, it will be necessary to slack off on the respective turnbuckles.

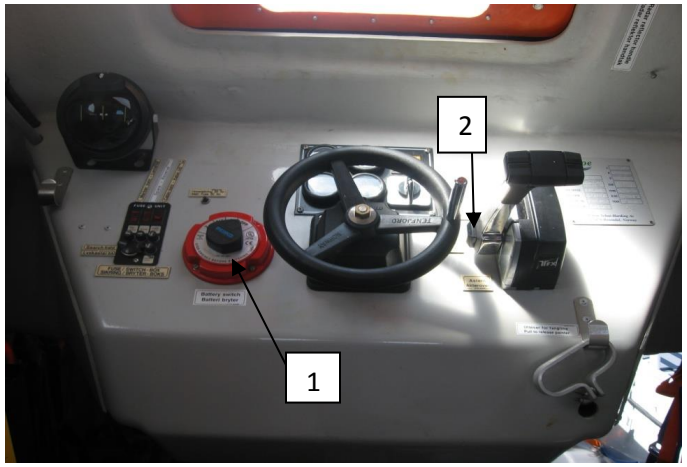




1. Battery selector switch, make selection by observing battery voltage
2. Ignition switch, keyless, turn to start position to start engine
3. Throttle
4. Engine compression gauge
5. Oil pressure gauge
6. Cooling water temperature gauge
7. Battery voltage gauge

Starting the lifeboat engine in an emergency

1. Select battery
2. Disengage throttle by depressing button and push throttle ahead
3. Turn ignition switch to “start”



Recommended Distress call format

Word “MAYDAY” spoken **3x**

This is… (Vessels name or call sign) spoken **3x**

“MAYDAY”

Vessels name or call sign

Position…Latitude_____ Longitude_____

Vessel is (Nature of emergency)

Number of persons aboard

“MAYDAY”, (Vessels name or call sign), Over[1]

[1] http://msi.nga.mil/MSISiteContent/StaticFiles/NAV_PUBS/ICOS/Chapter4.pdf

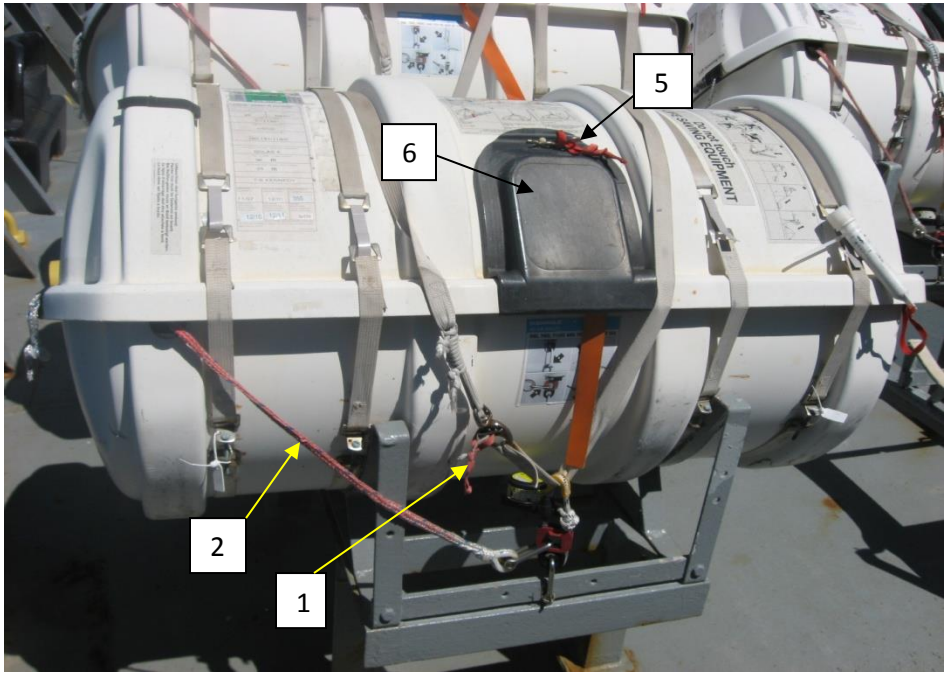
Electronic code of Federal Regulations and Table of Lifesaving Signals provided separately

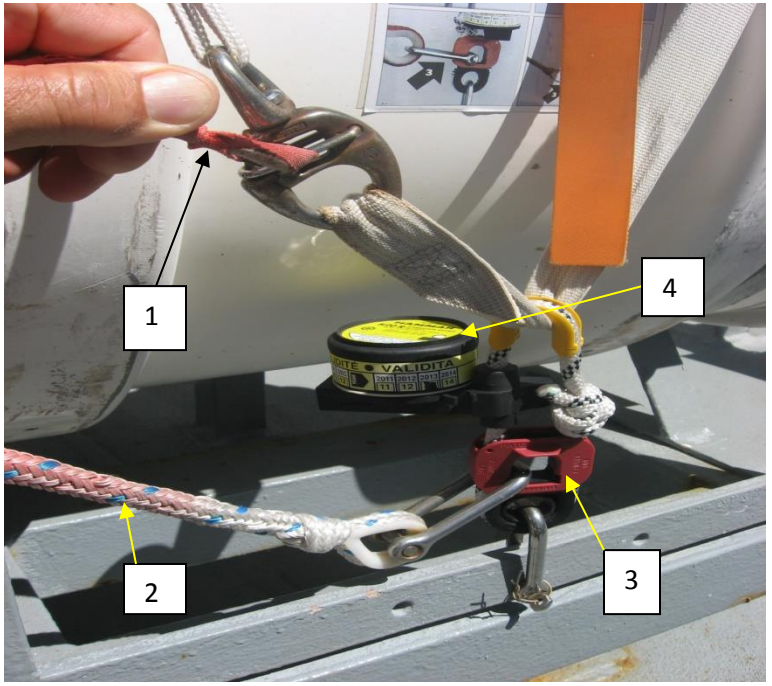
Davited Assisted Liferaft

Launching the Davit Assisted Life Raft Overview

1. Release the pelican hook which releases the straps securing the life raft canister to the frame
2. Remove the canister access cover revealing the lifting shackle
3. Slew the boom over the center of the canister to be lifted
4. Attach the hook to the lifting shackle
5. Hoist the canister, using the low speed winch, high enough to clear the bulwark
6. Get ahold of and manage sea painter, and two bowsing lines
7. Slew boom head outboard (perpendicular to embarkation opening)
8. Open bulwark embarkation opening
9. Pull out excess sea painter to inflate raft; make sea painter fast well forward
10. When raft is fully inflated adjust bowsing lines so that raft is securely positioned at the embarkation opening
11. Have passengers board life raft distributing weight evenly
12. Set hook to the release when the liferaft is floating
13. Release bowsing lines
14. Pick up brake and lower raft to water
15. Cut sea painter with knife provided at liferaft opening

Upon removing the cover, the life **raft lifting shackle (1)** is readied





To manually deploy this life raft, the straps must be released by pulling the small red lanyard on the **pelican hook (1)**

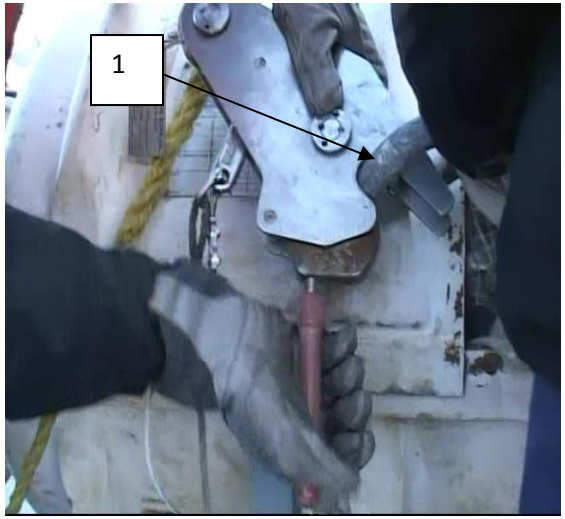
The sea painter (2) will be released from the **weak link (3)**, and lead well forward and secured

The hydrostatic release (4) is part of the automatic life raft deployment system. This release cuts through a bight of line which hold the straps in place, allowing the life raft to float free

A **safety pin (5)** is pulled and **cover (6)** removed to access the life rafts' lifting shackle

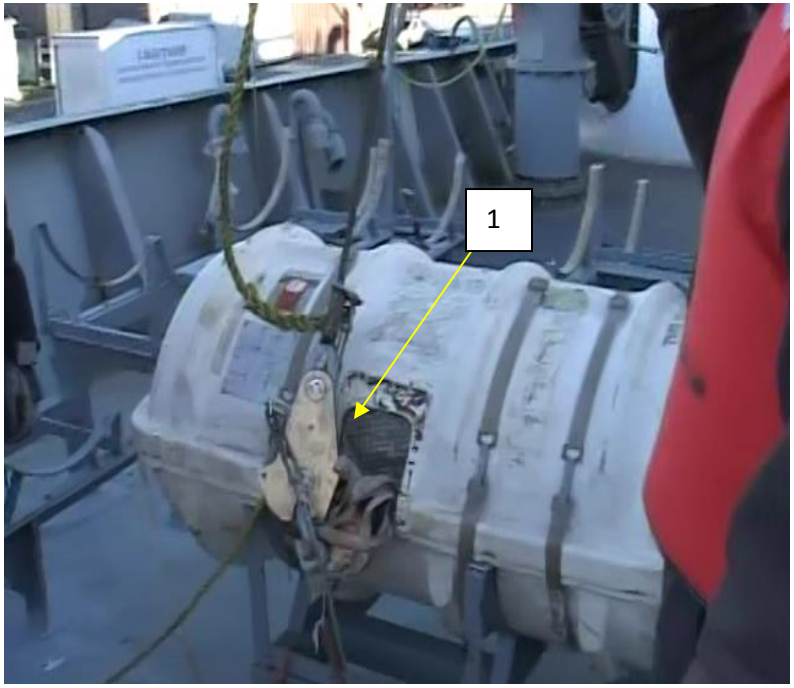
Launching the Davit Assisted Liferaft

1. Slew the head of the davit over the center of the liferaft
2. Remove the crank and move it up to the low speed winch position, in readiness to lift the raft
3. This side has the high speed crank which is only used for retrieving the empty hook and readying it for the next raft

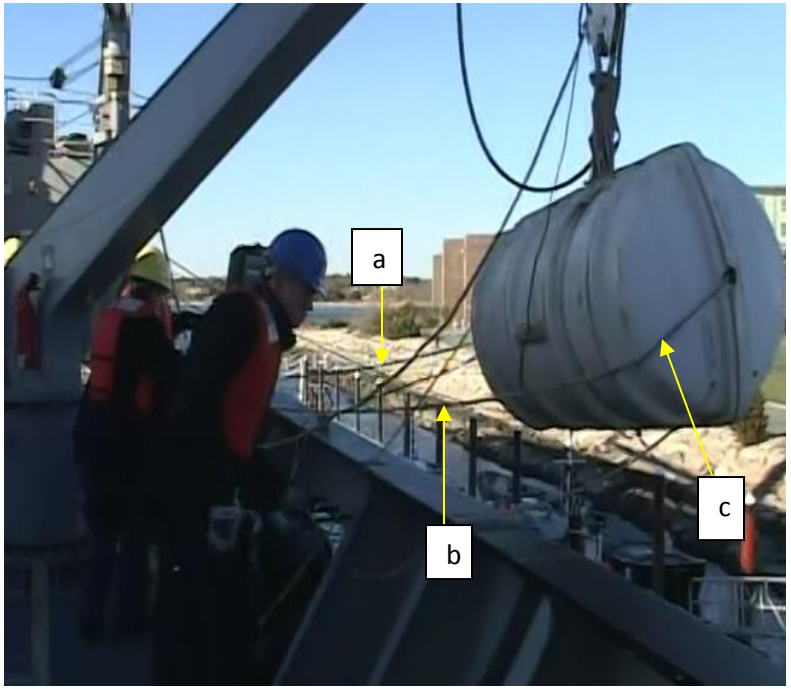


1. The head of the davit has been positioned over the center of the liferaft and the hook is positioned to close around the lifting shackle

2. A red handle, which is attached to the hook by a lanyard, is positioned and used to close the hook around the lifting shackle



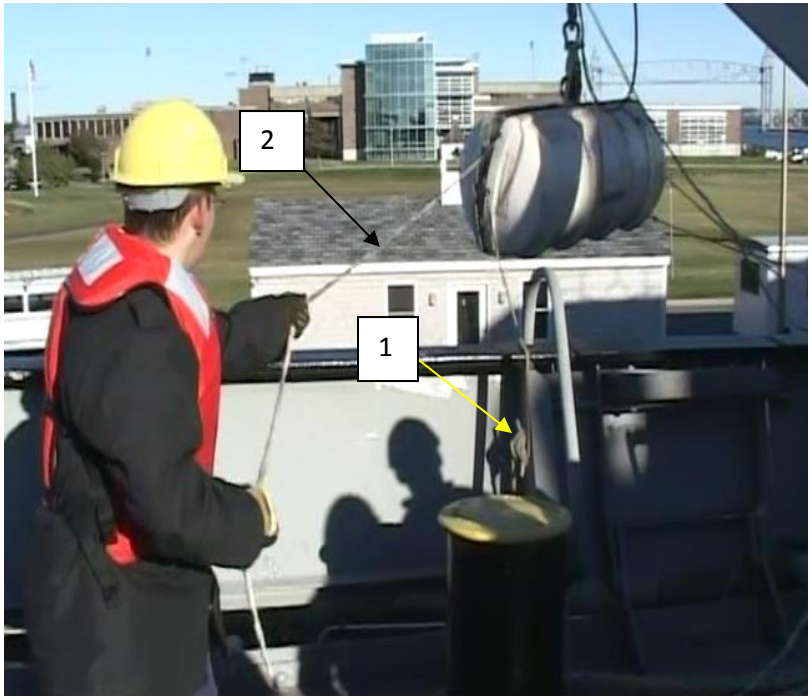
1. The hook is attached to the lifting shackle
2. Hoisting starts with the low speed winch



1. The life raft canister is hoisted high enough to clear the bulwark and positioned so that the end with the seapainter leads forward

2. There are three labeled lines that must be pulled out of the life raft canister before the canister gets out of reach

a. The sea painter (led well forward)
b. The forward bowsing line
c. The after bowsing line



1. The fore and after bowsing lines are made fast to cleats on either side of the embarkation opening

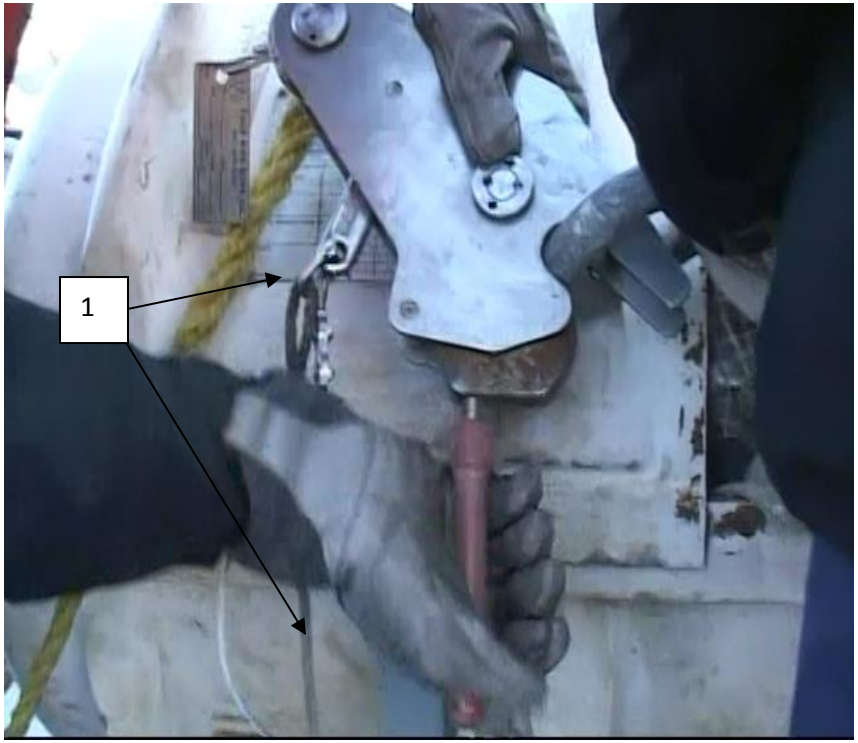
2. The sea painter is pulled out to inflate the liferaft and then secured well forward

3. Inflation has begun and the canister falls away. Canister lines keep the canister from blowing away and injuring someone

The raft continues to inflate; notice how the **bowsing lines (1)** keep the liferaft entrance orientated towards the embarkation opening

1. Once the liferaft is completely inflated the bowsing lines are snugged up so that the liferaft opening is firmly up against the embarkation opening

2. The bulwark embarkation opening is being prepared



The life raft would now be boarded, distributing weight evenly

The bowsing lines are released

Before the brake is lifted, set the hook to release when the raft is floating. This is accomplished by pulling on **short tagline (1)**

The last life raft to be deployed must take **the bag (2)** which contains a line connected to the brake. The brake is then tended by a person in the liferaft

Once the life raft is floating and the off load hook releases, the sea painter is cut and the raft is away

Signaling Methods and Equipment

So, you have abandoned your sinking GMDSS vessel, and you find yourself in a lifeboat or life raft.

What now?

Well the GMDSS doesn't stop yet - there are specific GMDSS radio systems developed for operation from survival craft.

These systems are designed to alert rescuers to your plight and guide them to your location.

Search And Rescue (Radar) Transponders (SARTs)

SART is a self-contained, portable and buoyant Radar Transponder (receiver and transmitter).

SARTs operate in the 9 GHz marine radar band, and when interrogated by a searching ship's radar, respond with a signal which is displayed as a series of dots on a radar screen; when at a range of 5-6 nm.

The range achievable from a SART is directly proportional to its height above the water.

A SART mounted at 1m (ie: in a life raft) should be able to be detected at 5 nautical miles by a ship's radar mounted at 15m.

The same SART should be able to be detected at 30 nautical miles by an aircraft flying at 8000 feet.

Search **A**nd **R**escue **T**ransponder or **S.A.R.T.**

A S.A.R.T. will only respond to a 9 GHz X-band (3 cm wavelength) radar. It will not be seen on S-band (10 cm) radar. The S.A.R.T. may be triggered by any X-band radar within a range of approximately 8 nautical miles.

When looking for a S.A.R.T. on the radar, it is preferable to use either the 6 or 12 nautical mile range scale.

The detection range between these devices and ships is dependent upon the height of the ship's radar mast and the height of the S.A.R.T. (normally about eight nautical miles). If the radar settings are not optimized for S.A.R.T. detection a marine radar may not detect a S.A.R.T. even within this distance.

How to activate a S.A.R.T.

1. Remove the S.A.R.T. from its container
2. Pull the safety pin
3. Check that the red light is on
4. Secure the S.A.R.T. as high as possible

Operating life span - 100 hours in stand-by mode and 8 hours when continuously sending a signal

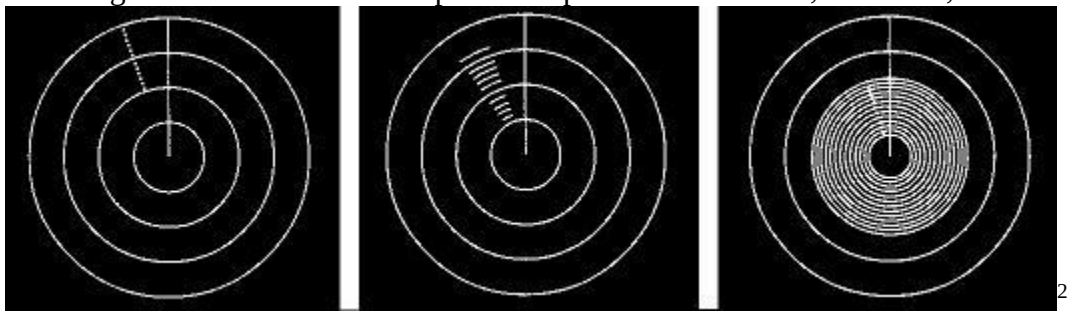
Search And Rescue Transponder (S.A.R.T.) Can I test it to see if it works?

A test can be done in port in conjunction with a vessel's own radar, or with the radar on a nearby vessel, provided that the duration of the test is kept to the absolute minimum time to avoid any disturbance to other vessels. Such tests should be coordinated with the local harbourmaster and/or coast guard.

Set the radar to a 12 mile range (or thereabouts) and turn the gain up. Switch off filters such as Sea Clutter and Rain Clutter and switch on the SART at least 20 metres away from the radar scanner. It will not need to be directly in the beam of the radar, but should have a clear line of sight to the scanner, and should ideally be in an open area away from reflecting surfaces.

You should expect to see a series of concentric rings around the radar screen. This is due to the short range, with the SART responding to and being detected by the radar scanner throughout its rotation, even when pointing in the opposite direction. Turn the gain down, and the rings will probably narrow to a series of arcs. Only at longer range will the characteristic dots be seen, due to the width of the radar beam.

This kind of test gives a good deal of confidence that a SART is working properly, but even a SART with poor sensitivity and/or low output will work at short range. SARTs should also be checked that they are correctly tuned, as they need to be compatible not only with marine radars but also with airborne radars. A properly equipped service center will not only change the battery in your SART, but will be able to fully test its performance and provide you with printed test results.
The diagrams below show the expected responses at 5-6 miles, 2-3 miles, and <1 mile.

 [2]

[2] http://www.sartech.co.uk/products/sarts/frequentlyaskedquestions 8-14-201

AIS SARTS

Manufacturers have recently developed SARTs which work in conjunction with the VHF Automatic Identification System (AIS).

IMO has recognized AIS SARTs as being equivalent to radar SARTs for SOLAS carriage - i.e. ships can substitute an AIS SART for a radar SART.

The AIS SART comprises a two channel VHF AIS transmitter and a GPS receiver integrated into one waterproof enclosure - which is very similar in size to a traditional radar SART.

The AIS SART transmits a sequence of 8 messages a minute. Each message is transmitted in a 26 millisecond time slot. 4 messages are transmitted on AIS channel 1 (161.975 MHz) and 4 on AIS channel 2 (162.025 MHz). This time frame is designed to maximize the period that the SART will be visible to other ships AIS receivers. Reception of only 1 of the 8 messages will enable accurate location of the SART.

AIS SARTs are coded with a **unique 9 digit identification code** beginning with 970 - very similar to a DSC MMSI. The identification code is structured as follows:

970XXYYYY, where

970 is the SART prefix

XX is the manufacturer's 2 digit code

YYYY is the individual SART number

Shipboard AIS systems will recognize the 970 prefix as a SART, and display the target as a circle with a cross.

The AIS SART offers **significant advantages** over the radar version - the much lower operating frequency (160 MHz vs 9000 MHz) means that range is significantly increased. Moreover, because VHF can (to a certain extent) propagate around hills, SARTs can literally be seen 'around corners'.

More info on AIS SARTs can be found at the following manufacturer's websites:

Jotron McMurdo[3]

[3] http://www.gmdss.com.au/surcraft.html 8-14-2015

EPIRB stands for Emergency Position Indicating Radio Beacon. An EPIRB is meant to help rescuers locate you in an emergency situation, and these radios have saved many lives since their creation in the 1970s. Boaters are the main users of EPIRBs.

A modern EPIRB is a sophisticated device that contains:

- **A 5-watt radio transmitter operating at 406 MHz**
- **A 0.25-watt radio transmitter operating at 121.5 MHz**
- **A GPS receiver**

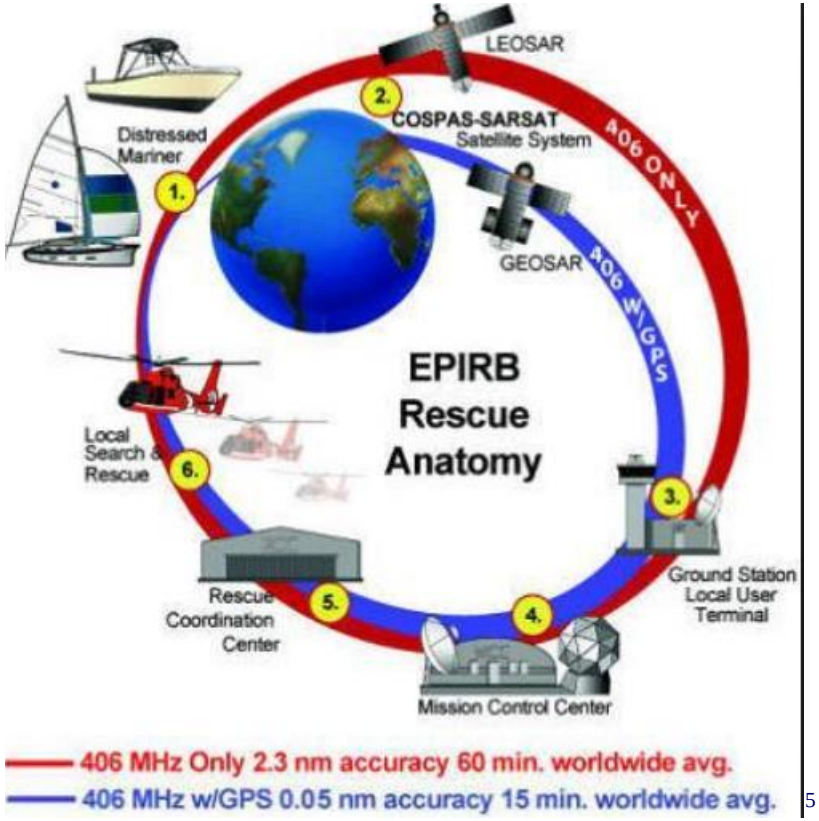
Once activated, both of the radios start transmitting. Approximately 24,000 miles (39,000 km) up in space, a GOES weather satellite in a geosynchronous orbit can detect the 406-MHz signal. Embedded in the signal is a unique serial number, and, if the unit is equipped with a GPS receiver, the exact location of the radio is conveyed in the signal as well. If the EPIRB is properly registered, the serial number lets the Coast Guard know who owns the EPIRB. Rescuers in planes or boats can home in on the EPIRB using either the 406-MHz or 121.5-MHz signal.

Older EPIRBs did not contain the GPS receiver, so the GOES satellite received only a serial number. To locate the EPIRB, another set of satellites (like the TIROS-N satellite) orbiting the planet in a low polar orbit could pick up the signal as it passed overhead. This would give a rough fix on the location, but it took several hours for a satellite to come into range.

Manual and Automatic Deployment and Activation

For an EPIRB to begin transmitting a signal (or "activate") it first needs to come out of its bracket (or "deploy"). EPIRBs can be activated manually - when a button on the unit is pushed, or automatically - when water comes into contact with the unit's "sea-switch". Deployment can happen either manually - where someone has to physically take it out of its bracket - or automatically - where water pressure will cause a Hydrostatic Release Unit to release the EPIRB from its bracket. If it does not come out of the bracket it will not activate. There is a magnet in the bracket which operates a reed safety switch in the EPIRB. This is to prevent accidental activation when the unit gets wet from rain or shipped seas. The *Category I* - type is recommended by IMO because a float-free bracket will deploy automatically once the vessel sinks and the EPIRB will then be activated automatically by immersion in water. All modern EPIRBS provide both methods of activation. Depending on the circumstances, they are capable of being activated either manually (crewman flicks a switch) or automatically (the "sea-switch" is activated when the unit is immersed in water).[4]

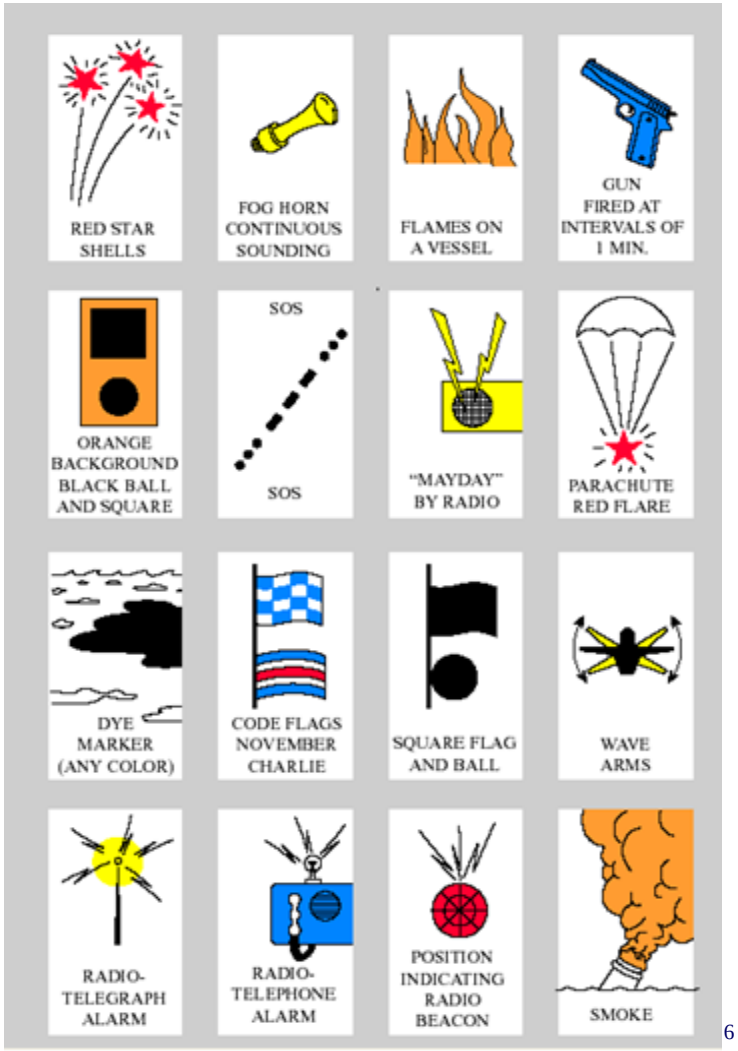
[4] http://14300.net/epirb.htm



[5]

55555

https://www.google.com/search?q=Epirb+rescue+anatomy+diagram&tbm=isch&imgil=PhlMs3ai_Gv5YM%253A%253BIWJUv_f5U5PQtM%253Bhttp%25253A%25252F%25252Fwww.iboats.com%25252FEPIRB-s-Emergency-Beacons%25252Fdm%25252Fview_id.217491&source=iu&pf=m&fir=PhlMs3ai_Gv5YM%253A%252CIWJUv_f5U5PQtM%252C_&usg=__eJmPh5dj2XZjBSFjmZLM7M26LaI%3D&biw=1536&bih=678&ved=0ahUKEwjKmbrvkrvVAhXKOCYKHYScBJ4QyjcIPw&ei=BiKDWcr-GcrxmAGEuZLwCQ#imgrc=PhlMs3ai_Gv5YM:



[6]

DISTRESS SIGNALS

72 COLREGS

[6] http://www.navcen.uscg.gov/?pageName=Rule3637

The differences between EPIRBs and PLBs

Personal Location Beacons work in exactly the same way as EPIRBs by sending a coded message on the 406 MHz distress frequency which is relayed via the Cospas-Sarsat global satellite system.

However, there are a number of differences between them. PLBs are designed to be carried on the person so they are much smaller, some such as the Fast find are not much larger than the size of a mobile phone. PLBs are designed to be used anywhere in the world, on the sea and also on land. Some don't float but may come with an additional floatational sleeve which they should be carried in.

PLBs, once activated, will transmit for a minimum of 24 hours; while the battery life on an EPIRB is at least double (a minimum of 48 hours). An EPIRB is registered to a vessel, whereas a PLB is registered to a person. This means that if you are crewing a yacht and you switch to a new yacht the plb is still correctly registered; however, if you have an EPIRB and buy a new yacht you will need to re-register it when installing in your new boat. EPIRB PLB

[7]

[7] http://www.epirb.com/difference_between_EPIRBs_PLBs.php

SECTION 1: DISTRESS SIGNALS

(PRESCRIBED BY THE INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA 1972)

To be used or displayed, either together or separately, by a vessel (or seaplane on the water) in distress requiring assistance from other vessels or from the shore.

1. A gun or other explosive signal fire at intervals of about a minute.
2. A continuous sounding with any fog-signaling apparatus.
3. Rockets or shells, throwing red stars fired one at a time at short intervals.
4. A signal made by radiotelegraphy or by any other signaling method consisting of the group • • • – – – • • • **SOS** in the Morse Code.
5. A signal sent by radiotelephony consisting of the spoken word **"MAYDAY"**.
6. The International Code Signal of distress indicated by **NC**.
7. A signal consisting of a square flag having above or below it a ball or anything resembling a ball.
8. Flames on the vessel (as from a burning tar barrel, oil barrel, etc.).
9. A rocket parachute flare or a hand flare showing a red light.
10. A smoke signal giving off a volume of orange-colored smoke.
11. Slowly and repeatedly raising and lowering arms outstretched to each side.
12. The radiotelegraph alarm signal.*
13. The radiotelephone alarm signal.**

14. Signals transmitted by emergency position-indicating beacons.***

NOTES: (a) Vessels in distress may use the radiotelegraph alarm signal or the radiotelephone alarm signal to secure attention to distress calls and messages. The radiotelegraph alarm signal, which is designed to actuate the radiotelegraph auto alarms of vessels so fitted, consists of a series of twelve dashes, sent in 1 minute, the duration of each dash being 4 seconds and the duration of the interval between 2 consecutive dashes being 1 second. The radiotelephone alarm signal consists of 2 tones transmitted alternately over periods of from 30 seconds to 1 minute.

*(b)*The use of any of the foregoing signals, except for the purpose of indicating that a vessel or seaplane is in distress, and the use of any signals which may be confused with any of the above signals is prohibited.

*(c)*Attention is drawn to the relevant sections of the Merchant Ship Search and Rescue Manual and the following signals:

(i.) a piece of orange-colored canvas with either a black square and circle or other appropriate symbol (for identification from the air);

(ii.) a dye marker.

* A series of twelve four second dashes at intervals of one second.

** Two audio tones transmitted alternately at frequency of 2200 Hz and 1300 Hz for a duration of 30 seconds to one minute.

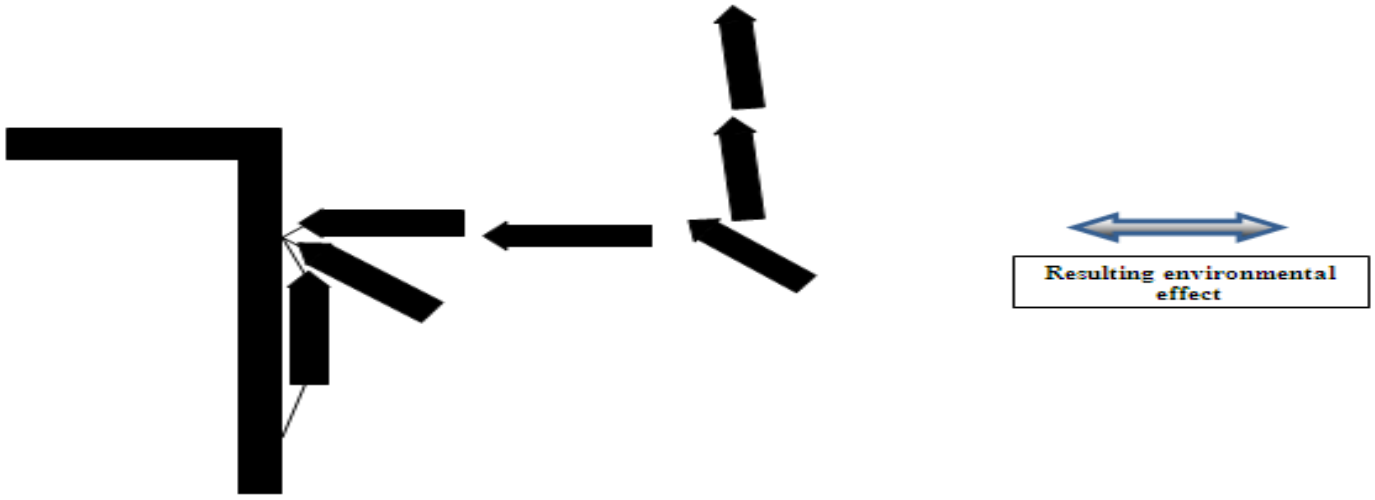
*** Either the signal described in ** above or a series of single tones at a frequency of 1300 Hz.[8]

[8] http://msi.nga.mil/MSISiteContent/StaticFiles/NAV_PUBS/ICOS/Chapter4.pdf

Planning a Get Away or Landing with a Lifesaving Craft

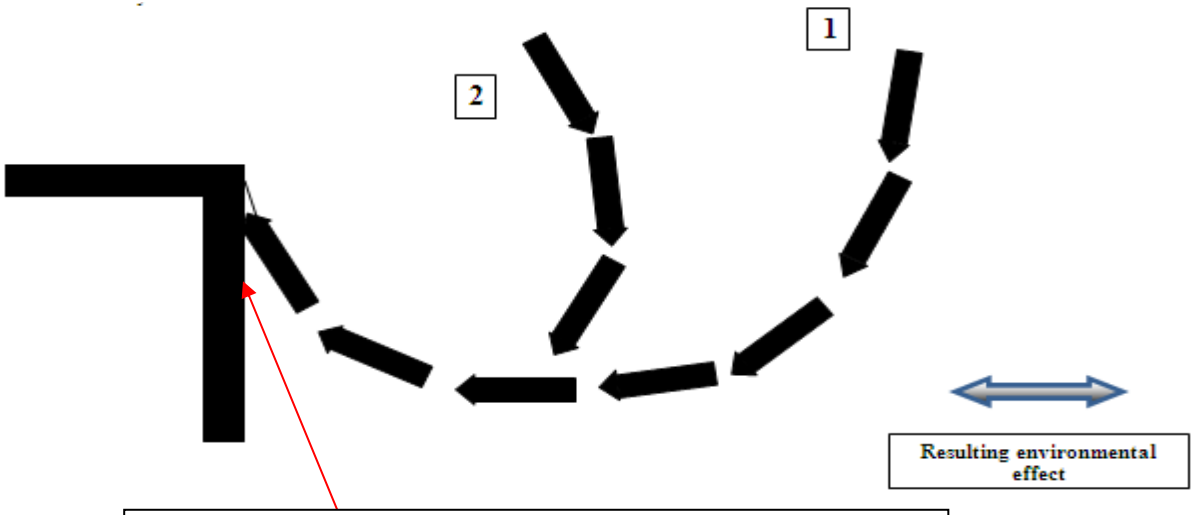
Typical Get Away

1. Stern line is cast off, stern is swept clear of pier
2. Bow line may be repositioned as a spring lead to keep from moving ahead while pivoting
3. Bring stern up into the wind when wind is “on the dock” to lessen the effect of the wind on the hull
4. Back the monomoy well clear of pier(s) allowing a safety margin before the next maneuver

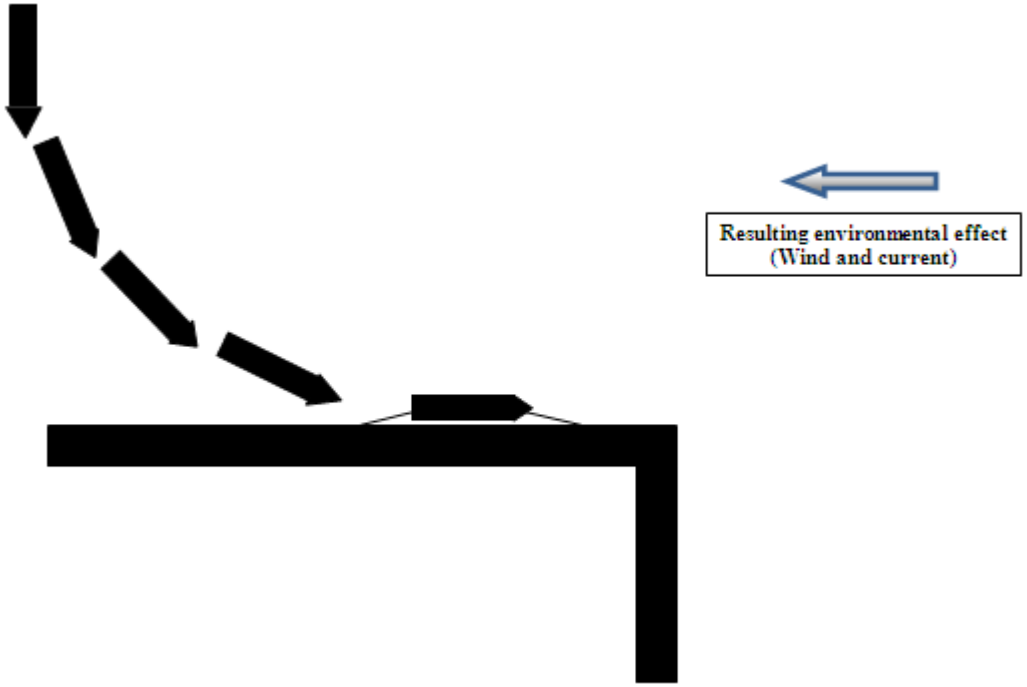


Approach Suggestions with an "On the dock breeze"

1. The turn shape in approach #1 allows more time to shape up and make adjustments. If the wind is from directly astern, hold water to keep headway to a minimum
2. The skill of knowing when to turn the vessel so as to land on the fendering and be alongside the dock is acquired through practice and repetition. When the environmental effects change so does the timing and turn shape
3. The coxswain must instruct the bowman to exit the vessel when alongside and secure the bow line as the stern is swept in using the sweep oar
4. The bowman is then passed a stern line



1. Remember small boat fendering is movable; move the fendering to facilitate docking with the most control for the given environment
2. This starboard side-to docking has the monomoy heading into the environmental effects which will create the best control when docking
3. A small vessel may be secured for a short duration with a properly led bow and stern line as shown



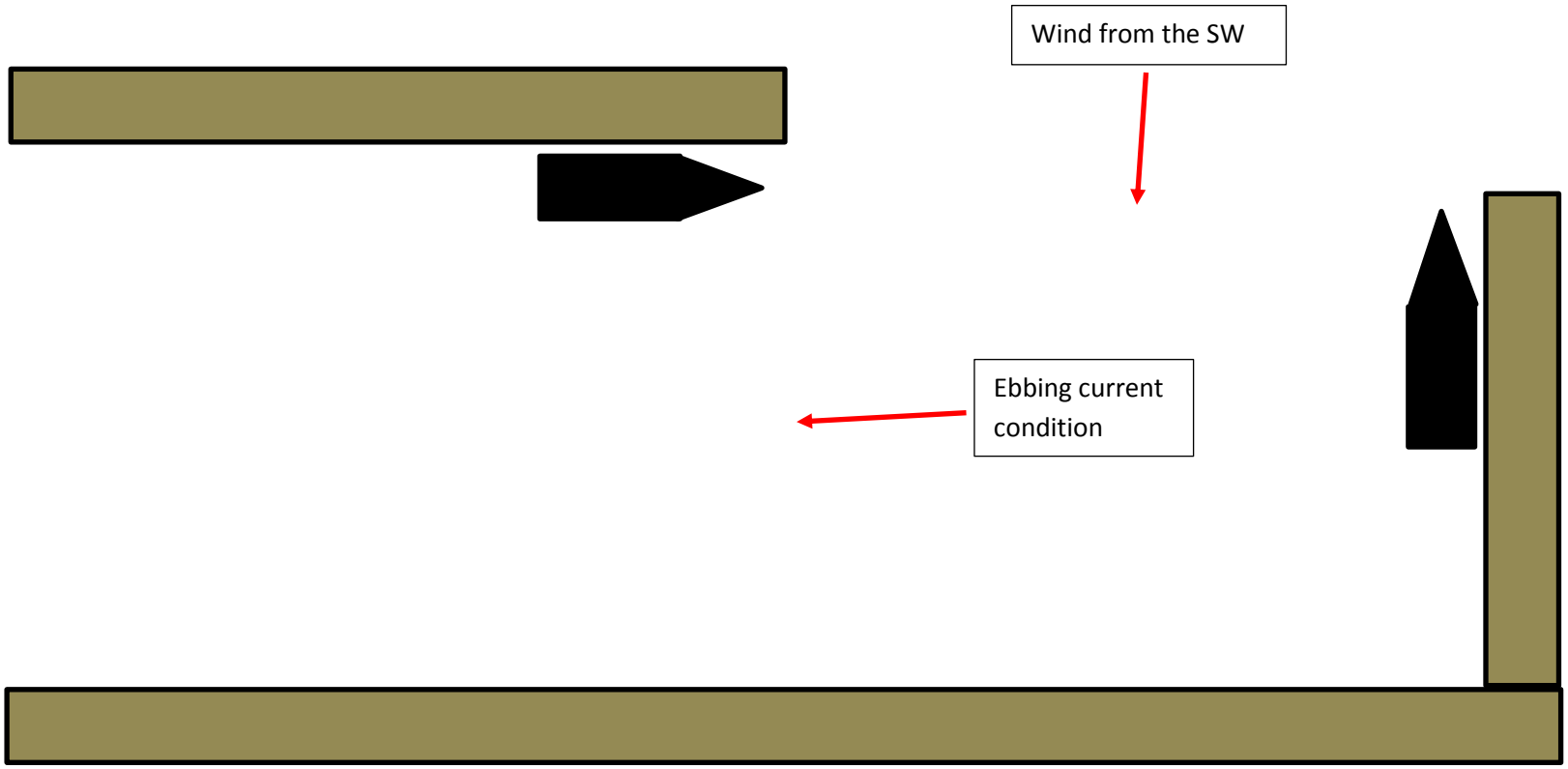
Summary of Points to Consider when Getting Away

- After releasing the stern line and starting to sweep the stern out, consider changing the lead of the forward line to a spring lead. This will check the forward motion of the monomoy when pivoting the stern out against an “on the dock breeze”
- Have the linehandler provide some “dynamic fendering” on the bow when pivoting the stern out and off of the forward fender
- Have the linehandler shove off while boarding so that the hull never contacts the dock
- While backing away from the dock with an “on the dock wind”, keep the stern into the wind for best control until well clear of all docks

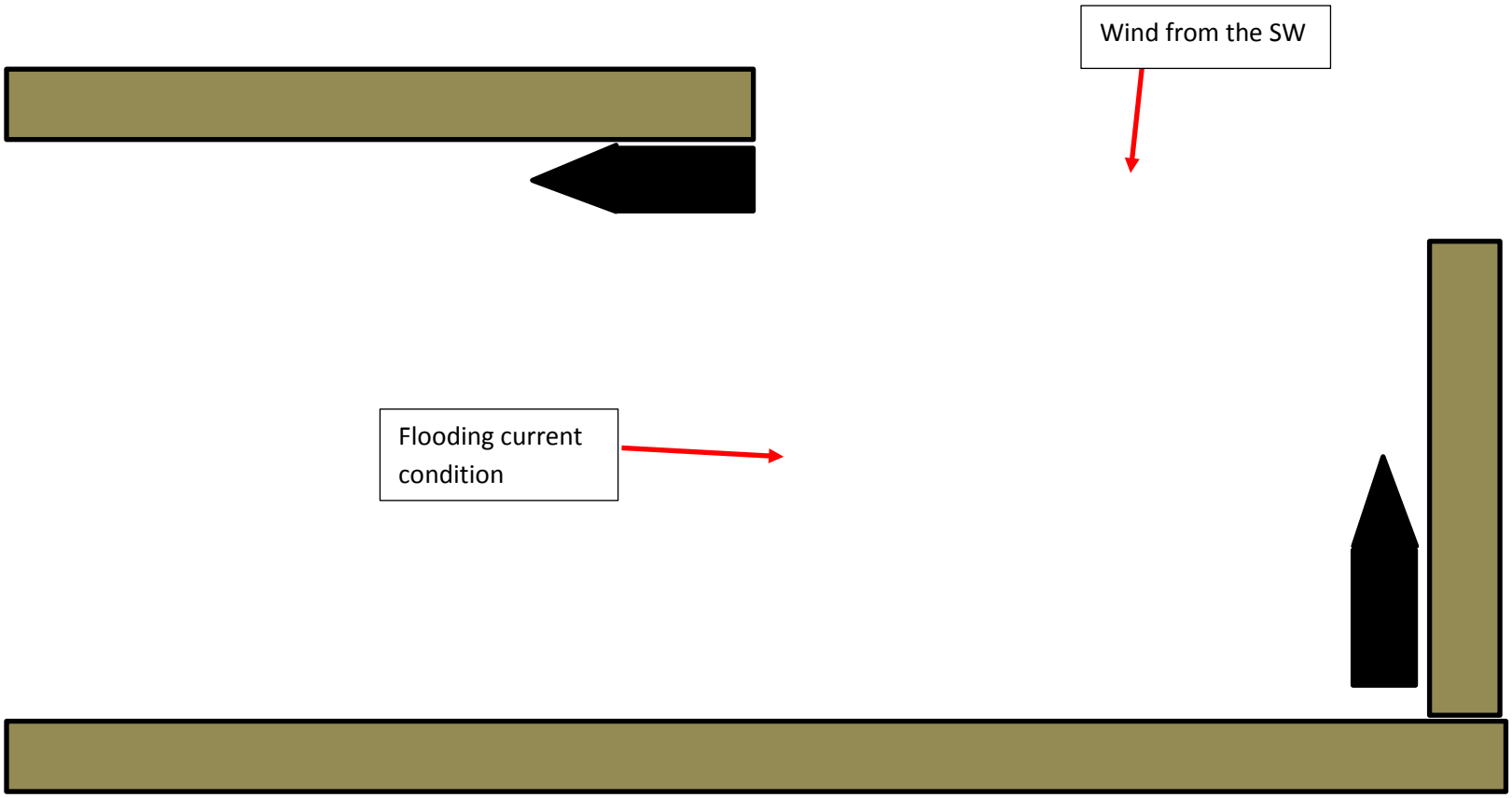
Summary of Points to Consider when Approaching and Landing

- Make your approach in such a manner that there is ample time to acertain the effects of the wind on the approach heading
- Control your speed to “bare steerage way” which means just enough speed to maintain control. With an “on the dock breeze” plan on using the “hold water” command to control your speed. With an “off the dock breeze” it will be easier to control the approach speed while working against the wind
- With an “on the dock breeze” I aim the bow for a spot on the dock just forward of the middle of the docking space. When about half a boat length off the dock aggressfully turn the monomoy; sliding sideways and ahead. Use the sweep oar as needed to control the bow so the linehandler may exit the boat
- With an “off the dockbreeze” as soon as the monomoy is turned, more hull surface area is exposed to the wind and the monomoy can be blown off the dock. In this situation, on approach, aim for the position where the bow is to be finally placed and stop the bow just short of the dock. Have bowman make fast a bow line (not too short) and then have bowman provide some “dynamic fendering” while the stern is being swept or powered in by the offshore rowers’. The stern will swing in, pivoting on the bow line. Make fast a stern line when the stern is against the dock.

Suggested Undocking/Docking Practice Senarios at MMA Waterfront for specific Environmental Conditions



Determine which environmental effect is the greatest and consider this in your approach plan



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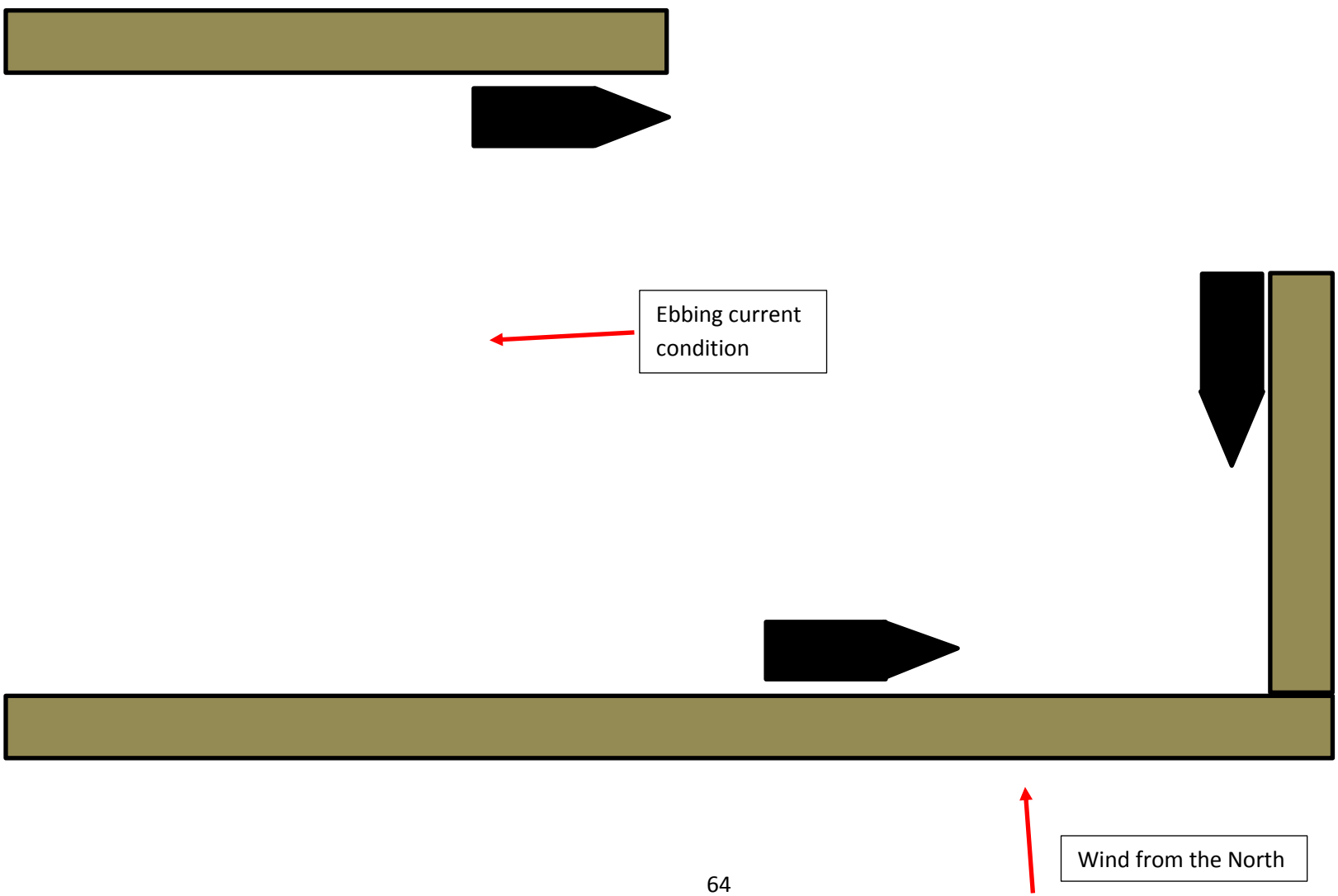

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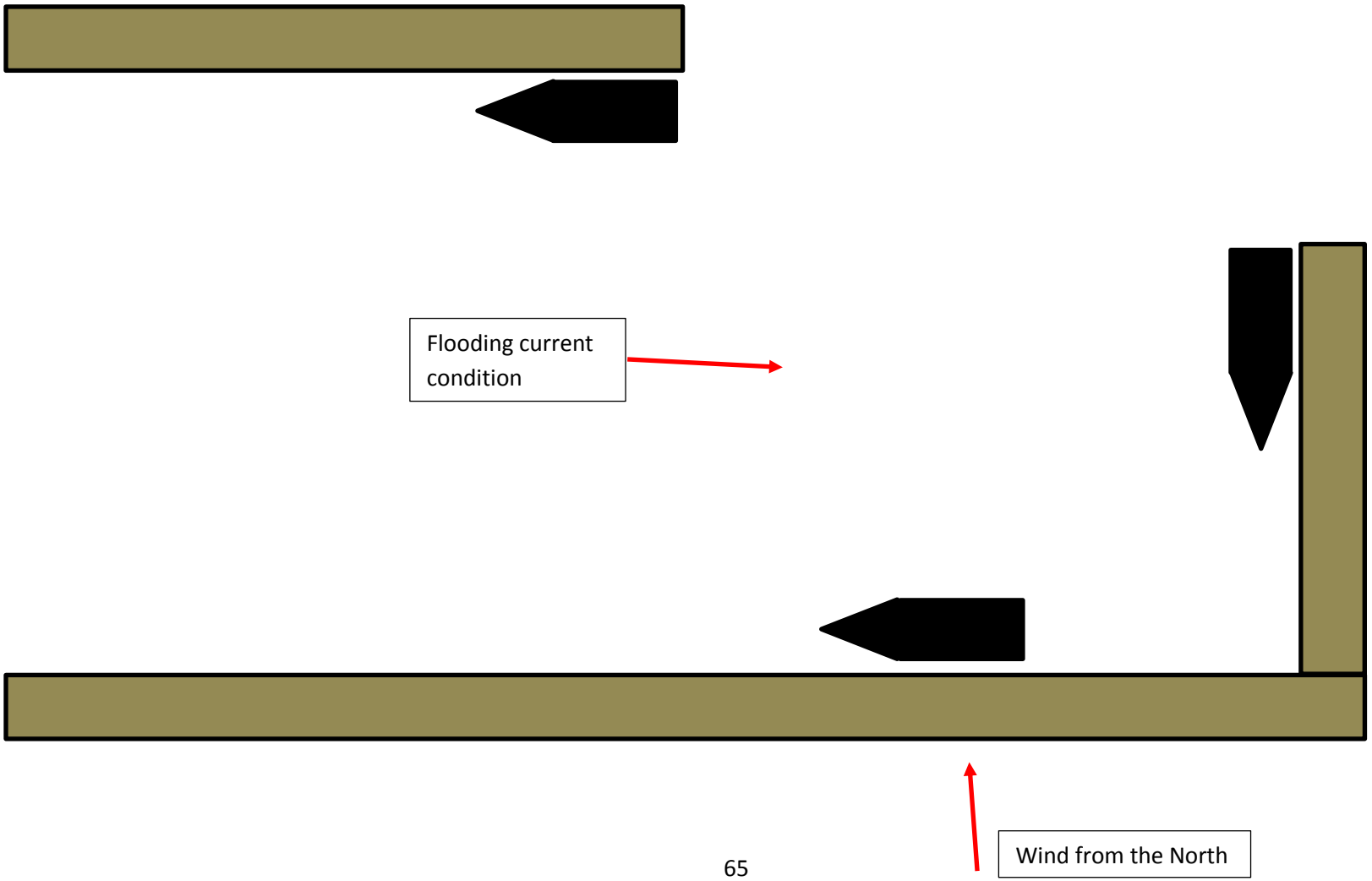


Managing Survivors

“In the event of an emergency, the safety of passengers becomes the number one priority of the crew. In accordance with the muster list, there will be crew designated to cope with the actual emergency and there will be crew designated to cope with the passengers. The biggest part of your job will be coping with panic.

Panic is a human response to fear and perceived threats to safety. Understanding the specific causes that lead to panic can help you calm a panicky situation quickly. The three specific causes that may trigger panic in an emergency are:

Emotional state: A person is less likely to behave rationally at the onset of an emergency. Their inability to cope with the perceived danger may cause them to act irrationally.

No escape: A person feels his or her life is threatened and may experience a feeling of helplessness.

Absence of leadership: A person is unable to cope with a danger and can’t find leadership to tell them what to do. There is no one to look to for order, control or information.

Confidence in knowing what you are doing and your ability to keep a cool head is paramount to preventing panic. It is up to you to prevent panic. Establish your presence to the passengers. Let them know that you are there and who you are. Show them that you can handle the situation and know what you are doing. This is difficult when you are really scared but you must provide strong leadership.

The more you practice what to do in an emergency, the better you will be able to handle such situations.

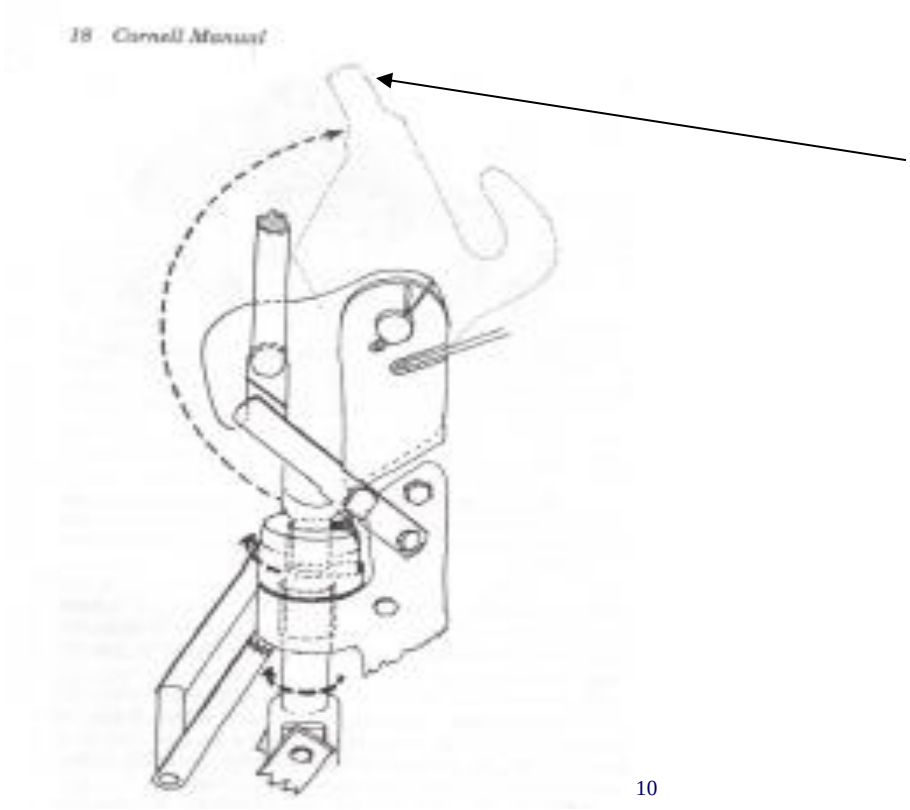
Maintain discipline and order and establish calm. Distract their minds from the concerns at hand by delegating tasks to take people's minds off their fears. Keep them informed. Don't make up fictitious information that you think they want to hear. Quell rumors immediately, however, don't provide unnecessary details. The known circumstances of an emergency situation should be told to passengers. They want to know! If you do not tell them, they'll make up their own erroneous explanations that will increase their fears and can lead to panic.

Passengers will look to crew for help in an emergency. It is the crew's duty to assist the passengers. Passenger safety is the crew's number one priority. The following list describes your duties with respect to passengers:

1. Ensure the safety of passengers. Keep a sharp lookout for any safety related problems such as trip hazards, passengers blocking doors, etc.
2. Prevent panic. Establish your presence and maintain order and discipline.
3. Direct passengers to their muster stations. Ensure that they are wearing or carrying their lifejackets.
4. Show passengers how to properly put on the lifejacket and offer assistance.
5. Insure passengers are suitably dressed.
6. Keep passengers away from emergency areas.
7. Keep passengers informed.
   Keep a positive attitude about your survival and rescue. This will improve your chances of extending your survival time until rescue comes. Your will to live will make a difference."[9]

[9] 3 Day Basic Safety Training Refresher Student Manual, 2002, RTM STAR Center, Dania Beach, Florida, pg 3-5, 3-6

Rotmar Hook



[10]

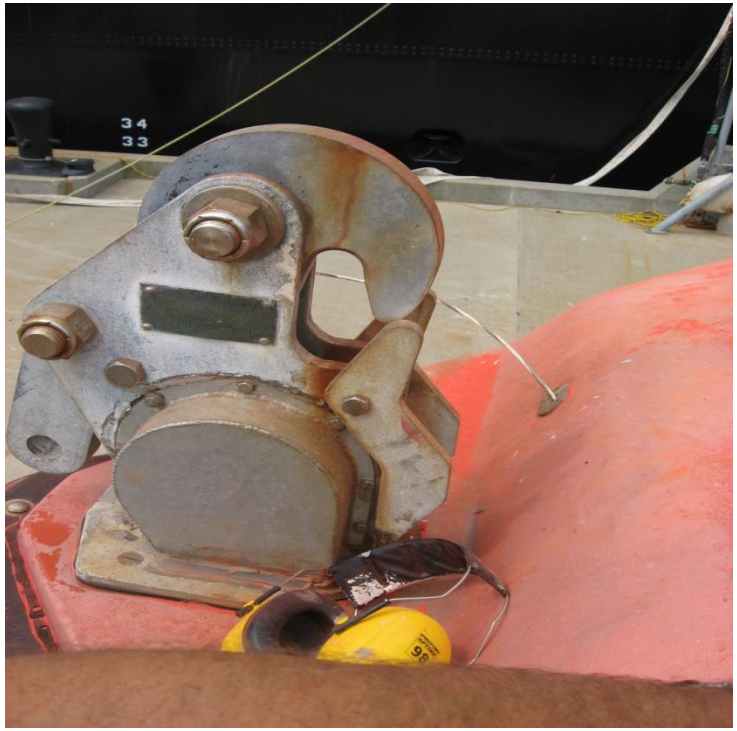
This "pin" part of the Rotmar releasing hook needs be locked down by first

1) Resetting the hooks, fore and aft
2) Then resetting the releasing gear lever and inserting the safety pin

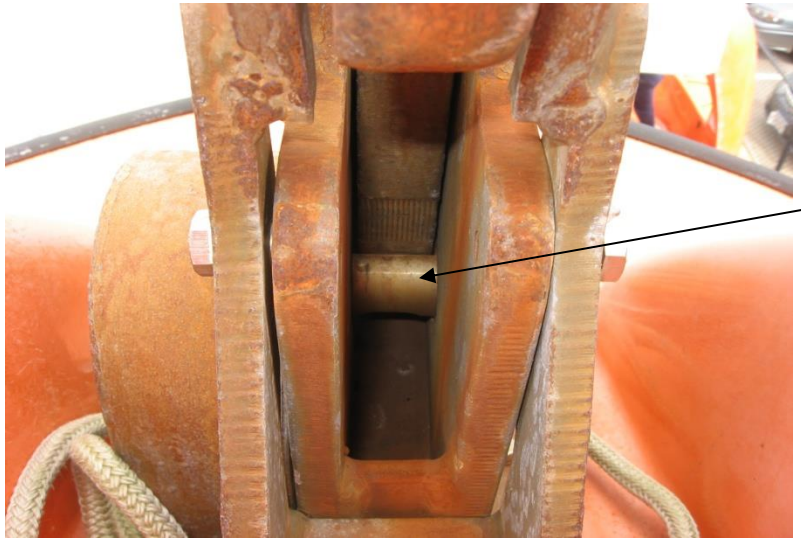
Lifeboats have released from the falls when hoisted if this operation is not completed correctly

[10] The Cornell manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department, Second Edition, John M. Keever, pg. 18

Pulling the releasing gear lever allows the Rotmar hooks to "open" as shown above. The hook may not appear "open" even though released until the lifeboat is driven away.



In preparation for recovery the Rotmar hook must be "reset" into the position as shown above. If positioned correctly the hook will be locked down when the releasing gear lever is "reset". Each Rotmar hook should be visually and physically checked insuring it is locked down.



When the releasing gear lever is “reset” a pin rotates over the tail end of the Rotmar hook, locking it down. Look for this in your visual inspection before hoisting the boat.

Here is another example showing how when the releasing gear lever is “reset”, the associated linkage rotates over the tail end of the Rotmar hook, locking it down. Look for this in your visual inspection before hoisting the boat.

Picture showing the linkage between the Rotmar releasing lever and the Rotmar hook

Sea Anchor

The sea anchor or drogue is a drag thrown overboard to help keep a vessel facing into the wind and sea; drift is lessened. How a vessel lays to the sea is determined by where the painter is attached.

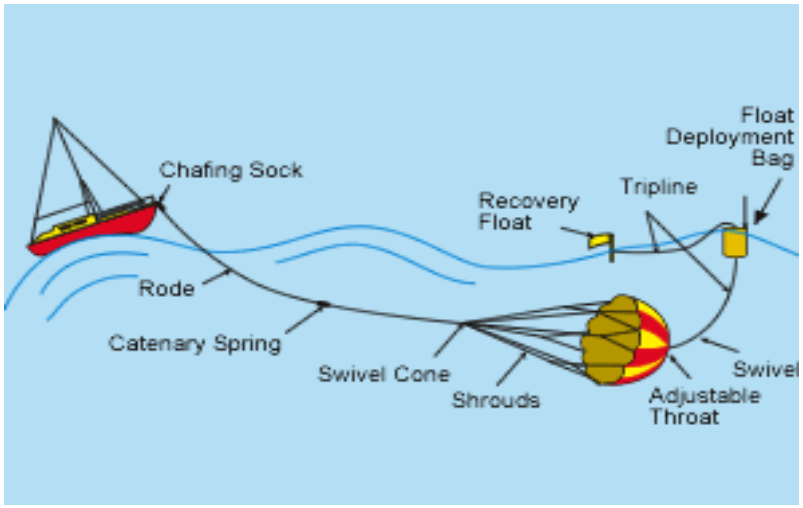
Sea anchors are sized according to the vessel size. A larger sea anchor will require a **trip line** to collapse the sea anchor for retrieval.

The trip line, (approximately 30 ft) is attached to a float so that it may be recovered; the float also indicates the location of the sea anchor so that the proper amount of anchor rode is deployed (shown in figure #3)

Storm Oil and Storm Oil Container

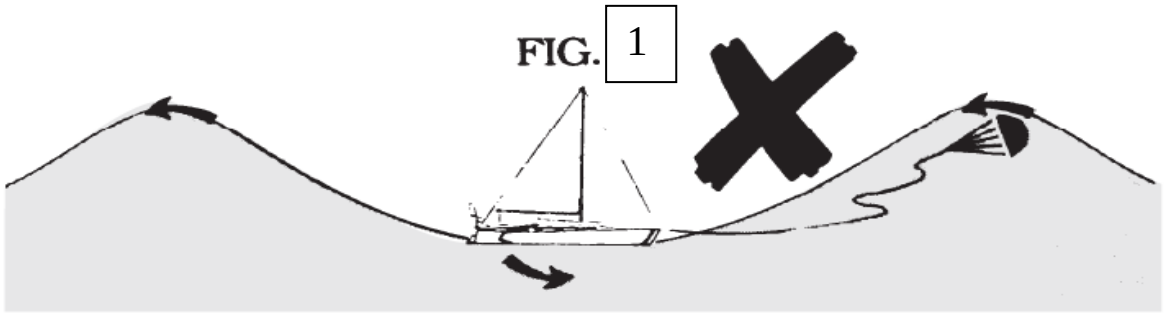
A storm oil container is a conical metal container which is designed to be secured in conically shaped sea anchor. When oil is spread on the water surface, its surface tension will suppress wave action to some extent. Of course, it can't eliminate the waves, but it will prevent some of them from breaking, and help knock down wave height.

Rode is the line or rope to which a vessel rides when anchored



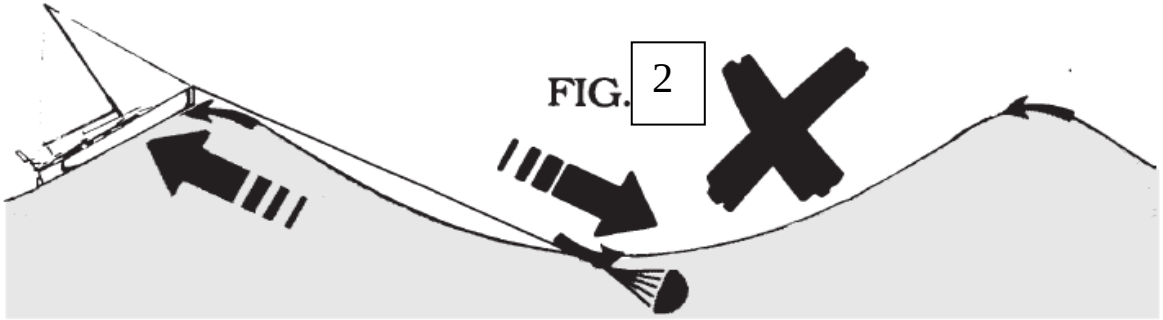
Direction wind and sea are

A sea anchor acts like an anchor keeping the vessel headed into the wind and seas



Incorrect Rode Length (Too Short)

Molecular rotation upwind in the trough and the correspondingn rotation downwind on the crest cause the boat and the parachute to momentarily converge.



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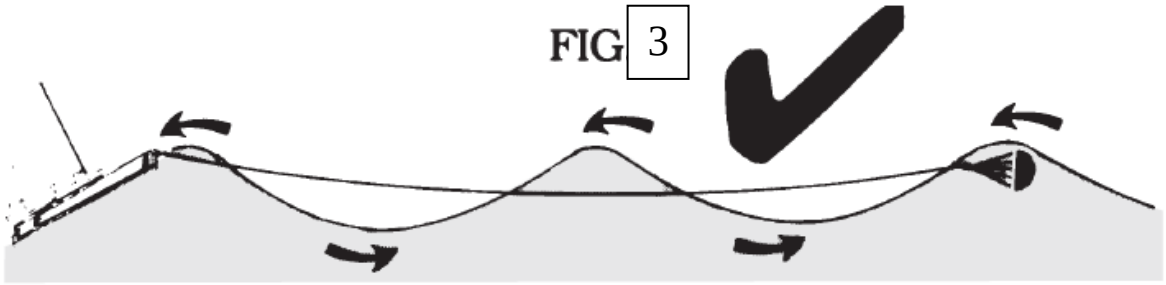
Incorrect Rode Length (Too Short)

Molecular rotation downwind on the crest and the corresponding rotation upwind in the trough cause the boat and the parachute to momentarily diverge (move apart). Note also how the inadequate rode length causes the sea anchor to interfere with buoyancy of the yacht as well.



Correct Rode Length

The **long rode** leaves the boat free to rise/move/rotate with the seas, and by stretching acts as a "buffer"to absorb much of the peak diverse loads; notice how the rode has been finely adjusted so that the boat and the sea anchor are rotating in unison on their respective waves. *Note that the tripline and float are not shown. Illustrations are not true to scale*.[11]

[11] http://www.seaanchor.com/pdf/sea_anchor_instructions.pdf, page 10

Sea Painter

The sea painter is a manila line used to sheer the lifeboat away from the ship's side and to keep the lifeboat near the mother ship to pick up the remaining crew. On open lifeboats, the sea painter is usually made fast to the lifeboats' second thwart by means of a strap eye and toggle. The other end is made fast to the main deck of the mother ship well forward on the outboard side of everything. It is released by pulling the toggle. The length of the sea painter is three times the distance from the boat deck to the ship's light load line, and it is not less than 2 3/4 inches in circumference.[12]

Is rigging a sea painter necessary? In my opinion, if the mother vessel has way on, a sea painter should be rigged so that the hydrodynamic forces which cause two vessels alongside one another to stay together can be overcome. If the mother vessel is dead in the water the sea painters' job is to keep the lifeboat near the mother ship to pick up any remaining crew.

The rigging of a sea painter is what I call a "long job" it takes time to lead this long, fairly large line well outboard and well forward on the vessel. For those lifeboats which leave no one on deck when deploying, a sea painter may be permanently rigged. A pre-rigged sea painter has the chance of chaffing as it moves about in wind and weather and should be inspected frequently for wear.

If the sea painter is not pre-rigged it should be faked out, large bights on either side of the rail, a technique which allows for a clean deployment.

[12] http://www.usmm.org/lifeboat2.html

MASSACHUSETTS MARITIME ACADEMY

KEITH HARTFORD SAILING CENTER

43 TRAILSEND COVE

GREAT HERRING POND

PLYMOUTH, MA

Shortest most direct route

Mile 0.0	Academy Drive at Main street (downtown Buzzards Bay), turn right, and proceed to rotary, continue straight through rotary following signs to Route 6 east, travel along the Cape Cod Canal
Mile 1.6	Continue straight through traffic lights
Mile 3.6	Left lane to Bournedale, make left turn
Mile 3.7	Go left at "T"
Mile 3.8	Continue to right on Herring Pond Road
Mile 4.5	Turn left onto Little Sandy Pond Road
Mile 4.8	Continue past Lake Ave. on right
Mile 4.9	Continue past Swamp Road on right
Mile 4.95	Turn right onto Roxy Cahoon Road
Mile 5.5	Turn right onto Trails End Cove Road
Mile 5.7	Turn right to MMA Keith Hartford Sailing Center; park at top of hill if parking available, if not follow road to bottom of hill

Alternative Route

Mile 0.0 Academy Drive at Main street (downtown Buzzards Bay), turn right, and proceed to rotary, continue straight through rotary following signs to Route 6 east, travel along the Cape Cod Canal

Mile 1.6 Continue straight through traffic lights

Mile 2.4 Left lane to Bournedale, make left turn

Mile 2.5 Go left at "T"

Mile 2.6 Continue to right

Mile 3.3 Continue past Little Sandy Pond Road when road closed

Mile 5.2 Turn left onto Long Pond Road

Mile 5.6 Turn left onto Carters Bridge Road, follow main road which has" double yellow line"

Mile 6.6 Paved road ends

Mile 7.5 Turn left, sign indicates "Keith Hartford Sailing Center MMA"

Mile 7.7 Turn right and proceed down road, chain gate will be open, park at top of hill and walk to waterfront