



TOWING



Terminal Performance Objectives Basic Coxswain

While underway on a 47 ft. MLB, in 4-6 ft. seas, DEMONSTRATE the ability to take a boat in tow. IAW COMDTINST M16114.11(series),

1. **Make** proper approach to the disabled vessel.
2. **Station keep** for a sufficient period of time to pass a drogue and towline to the disabled boat.
3. **Pass** a drogue to the disabled boat.
4. **Maneuver** the 47 ft. MLB to increase and decrease the safe working distance during station keeping.
5. **Increase** scope of towline.
6. **Decrease** scope of towline.
7. **Exercise** effective communications and crew control.



While underway on a 47 ft. MLB, in calm seas, DEMONSTRATE the ability to take a boat in alongside tow and moor to a dock. IAW COMDTINST M16114.11(series),

1. **Make** proper approach to the disabled vessel.
2. **Station keep** for a sufficient period of time to pass a drogue and towline to the disabled boat.
3. **Maneuver** the 47 ft. MLB to increase and decrease the safe working distance during station keeping.
4. **Exercise** effective communications and crew control.

While underway at night on a 47 ft. MLB, in 4-6 ft. seas, DEMONSTRATE the ability to take a boat in tow. IAW COMDTINST M16114.11(series),

1. **Evaluate** the weather conditions (wind and current)
2. **Determine** which side to take the boat alongside.
3. **Determine** how many side lines are needed.
4. **Maneuver** the MLB alongside the towed vessel.
5. **Connect** the side lines to the towed vessel
6. **Adjust** the side lines to minimize surging and shock-loading
7. **Moor** the disabled vessel to a dock.
8. **Exercise** effective communications and crew control.





Terminal Performance Objectives Heavy Weather Coxswain

While underway on a 47 ft. MLB, in seas greater than 8 ft.,
DEMONSTRATE the ability to take a boat in tow. IAW
COMDTINST M16114.14(series),

1. **Make** proper approach to the disabled vessel with bow square to swells
2. **Make** proper approach to the disabled vessel with stern square to swells
3. **Station keep** for a sufficient period of time to pass a drogue and towline to the disabled boat.
4. **Maneuver** the 47 ft. MLB to increase and decrease the safe working distance during station keeping.
5. **Increase** scope of towline.
6. **Decrease** scope of towline.
7. **Demonstrate** corrective action to be taken for a “hard chine” lock up.
8. **Exercise** effective communications and crew control.

While underway at night on a 47 ft. MLB, in seas greater than 8 ft.,
DEMONSTRATE the ability to take a boat in tow. IAW
COMDTINST M16114.14(series),

1. **Make** proper approach to the disabled vessel with bow square to swell.
2. **Stationkeep** for sufficient time to pass a drogue and tow line to the disabled vessel.
3. **Maneuver** the 47' MLB to increase and decrease the safe working distance during stationkeeping.
4. **Exercise** effective communications and crew control.

While underway on a 47 ft. MLB, in seas greater than 8 ft.,
Pass a dewatering pump to a disabled vessel. IAW COMDTINST
M16114.14(series),

1. **Demonstrate** ability to direct pass a pump
2. **Exercise** effective communications and crew control.



Duty Day Preparations

Your Boat- Knowledge of your boat's condition and equipment begins everyday with boat checks. If duties prevent you from supervising boat checks take the time to walk through the boat and check on the equipment you may need in heavy weather.



Thorough outfit - condition checks. Ensure all required equipment is on-board and stowed properly. Loose gear underway in heavy weather creates a hazard for the boats crew and stability of the vessel.



Discrepancies. Ensure all systems are operating within required parameters. No restrictive discrepancies that could affect the mission or disabling discrepancies are reported. If a waiver is in place you must know the conditions of use.



Pending Work. Know if maintenance is scheduled. If heavy weather is forecasted, and no other heavy weather boat is available, maintenance may need to be postponed.

Electronics. Know if your electronics are in working order. Ensure your waypoints are entered and have not been altered. Know your settings for radar ranges (NM, KM, KY). Know if your GPS is configured properly (Loran Mode, Display screens disabled?)

There should be no question in the mind of the crew that the boat, and its equipment are one hundred percent ready for operations.

Notes

Duty Day Preparations Cont.



Some Definitions

- Sea State – is both the sea swell as well as the significant wave height of the wind waves.
- Significant wave height – is the average height of the largest third of the wind waves observed or expected in an area. This means that 33% of the waves will be less than the given height, but 33%, about one in seven, will be higher. Even occasionally twice as high as the upper end of the forecasted range
- Combined seas - is the realistic conditions you will encounter.

The Weather- Heavy weather is determined to exist when seas exceed 8 feet and/or winds are greater than 30 knots. If heavy weather is forecasted it should be considered when planning a mission. Reliable and up to the minute information is critical for planning. There are many sources of information available to you.

Tides - Knowledge of the tides and how they effect your operating areas is very important. If you are going on a long mission or run the risk of seeking shelter in another port write down the tidal information before you get underway. If you do not have the information request it before you arrive. You may need to slow your speed or divert to another harbor to arrive at a favorable tide.

Sea State - Know what to expect before you get underway. Check the conditions in your operating area often. Use all means available to get accurate information. The internet is a valuable tool with information from weather stations and buoys. Be prepared.

Wind direction - The 47 ft. MLB is effected by the wind; and sea conditions change rapidly as the wind changes in contrast to the swell. Station keeping becomes more difficult as wind speed increases. The same information sources can be used to prepare.

Bar / Inlet Conditions - Conditions on the inlet or bar change rapidly due to weather and tides. The change of tide from flood to ebb may drastically change the conditions. Frequent checks should be made. When and how often you should check conditions in your operating area should come from experience and guidance from your command.

Information Resources - There are many sources of weather information, from weather messages, local television stations, and local mariners to the internet.

Forecasts are available for different zones.

Near Shore - Often the area is designated by geographical reference and out to as far as 60 nm offshore

Offshore - Generally covering the area from 60 to 250 nm. The forecast and a synopsis of weather conditions will provide you with a picture of what is coming.

High Seas - This zone covers areas like the North Pacific or North Atlantic and provides information on storms and systems.

Duty Day Preparations Cont.



Local Area Familiarity - Knowing your AOR will help you prepare for possible cases. When transiting to a case at night knowledge of danger areas and potential surf zones will make transiting safer and less stressful.

Knowledge of what type of boats and what commercial traffic you have in your area lets you anticipate possible problems you will encounter. Knowledge of fishing or recreational seasons and the hazards involved with them will make preparing for search and rescue cases easier and less stressful.

Crew Selection for heavy weather operations should be done with care. Operations in heavy weather or surf are fatiguing and stressful. Some factors to consider are:

Experience level of coxswain. If a coxswain is uncertain or anxious about the conditions they may encounter, requesting a more experienced heavy weather coxswain or surfman to assist may be the best option.

Experience level of crew. All operations in heavy weather have an increased level of risk. It may not be appropriate to take inexperienced crewmen without an experienced crewman as a safety observer. The coxswain/surfman will need assistance to maintain crew control and communication, for safety.

Physical condition of crew. Operations in heavy weather are extremely fatiguing and challenging physically. Crews should be well rested and in good physical condition before getting underway. Heavy weather operations are no place for a sick crewman. If there is any doubt about the condition of a crewman they should be replaced if personnel allow.



Mental condition of crew. Operations in heavy weather are extremely fatiguing and challenging mentally as well. Crews should be mentally prepared for the conditions they will encounter. Crewmen that are distracted by family crisis, personal conflict, or extreme apathy for the service should not be your first pick for a heavy weather crew

Duty Day Preparations Cont.

Anticipated length of mission. Missions requiring boats to be underway in heavy weather for long periods are extremely fatiguing. COMDTINST 5312.16 Boat Crew Utilization, lists fatigue standards for small boats. If personnel permit, consider taking a second qualified coxswain to act as a relief. If no relief is available, consider the use of multiple resources.

Boat Type	Maximum Underway Hours			Rest Required
	Seas <4 ft	Seas > 4 ft	Heavy WX	
44', 47', 52' MLB	10	8	6	8
Copied from Enclosure (2) to COMDTINST5312.16				

Pre Underway Preparations.

Gathering Information. The standard information needed to begin a SAR case must be gathered for a heavy weather case too. You should take greater care to get the information correct.

Position. Knowing where to find the disabled boat is critical. In heavy weather the disabled boats crew may be sick or fatigued or both. Confirming the position and asking for a geographical reference may help to clear up potential mistakes.



Nature of Distress. When heavy weather is involved it may be the reason for the distress. It can often make a minor breakdown into an extremely dangerous situation. Getting the whole picture before you leave the dock is important, extra equipment may be needed to safely assist the disabled boat.

Persons On Board / Condition. Know how many people you are going to assist. If you arrive on scene and the boat is gone you need to know how many people you are looking for in the water. Being in heavy seas brings on extreme fatigue, sea sickness, and possibly hypothermia. If everyone on the disabled boat is too sea sick to assist your crew in hooking up the tow you need to be prepared.

Pre Underway Preparations Cont.

Description of the vessel and its condition. The towing capacity of the MLB is effected by sea state. A vessel at the upper end of the towing limitation can be a real challenge in heavy weather. The condition of the boat is critical in heavy weather.

On Scene Weather. Note how the different environmental conditions will affect the operation. As conditions may likely change during the mission, estimate which phase of the mission will encounter which conditions and whether on-scene conditions will be different from those en-route. Keep a record of the present and forecast conditions (do not try to rely on memory) and update as necessary. Necessary condition information:

Existing and forecast marine weather (including winds, seas, bar conditions).

Currents and tide (next high/low, slack/maximum).

Daylight/Darkness (sunrise/sunset, twilight).



Navigation - The distinction between "piloting" and "navigation" is outlined in many respected publications, including Dutton's *Navigation and Piloting* and Bowditch's *Practical Navigator*.

The importance of sound piloting is well described in Dutton's:

"Piloting requires the greatest experience and nicest judgment of any form of navigation. Constant vigilance, unfailing mental alertness, and a thorough knowledge of the principles involved are essential. In pilot waters there is little or no opportunity to correct errors. Even a slight blunder may result in disaster, perhaps involving the loss of life."



Pre Underway Preparations Cont.

The three-minute rule is used, to determine speed, in knots, or distance, in yards.

Distance traveled in Three minutes divided by 100.

Example:

Distance 1000 yds

Time 3 min

Speed 10 knts

Chart Work Having a prepared chart to work from cannot be done while the SAR alarm is going off. Some thought and preparation should go into it before you leave the dock. You can make chartlets or laminate charts of a workable size. Laying out clearly readable track lines and courses, out of and into your harbor, with radar ranges, danger ranges, turn ranges, as well as bearings, will make piloting to open water safer. The prepared chart should be checked as well as used in calm conditions before it is used for heavy weather. Making your chart water resistant using laminates or a chart case will help keep it useable in storm conditions.

Although it may sound trivial, learn to fold your chart properly. A chart cannot be prepared for every possible position and it is very likely that you will have to plot a position on a chart, layout a track line, and go.

Plotting? Heavy weather brings additional problems to navigation and piloting, which are not found in calm conditions. Not the least of these is the mental approach to the problem. The physical exhaustion found in heavy weather can make it extremely difficult to concentrate, and the chances of making mistake are much higher.

Use all the resources available to you. You should have a radio guard with your unit or group never be afraid to ask them to maintain a plot and confirm your conclusions. The pitching and rolling of the lifeboat makes precise calculations difficult at best and sometimes impossible. Your ability to safely return home lies in your experience and your ability to pilot in the worst conditions with the tools you bring with you.

Notes

Enroute Considerations

Brief- Let your crew know as early as possible of the case and what you expect to encounter. Get feed back from your crew. A crewman will often notice things you may have overlooked. Use the knowledge of TCT to keep stress levels down and your crew focused on the mission.

Double Check Conditions While transiting to the disabled boat keep aware of the weather conditions. While talking to the disabled boat let them know the conditions you are encountering and compare them with what they see. If you must transit a long distance the weather radio broadcasts can let you know of changing forecast conditions.

Towers / Shore Lookouts -Many units have lookout towers that must be manned when boats are crossing the bar. These observers can give you a report of conditions and traffic on the bar. Never be hesitant to ask a senior person to man the tower or observe your transit out to sea. Experience and knowledge will allow them to help you as you make your way through hazardous conditions. If you do not have a tower available use a shore party from a good observation point or a backup boat as a second set of eyes.

Establish Communications Contact the disabled vessel as soon as you can maintain reliable communications. Let them know you are enroute and give them a estimated time you will be on scene. Double check the information you have received and confirm that they are making thorough rounds of there boat. If you have good confirmed information don't ask repeatedly for it. Repeatedly asking for information may have the effect of shutting down the operator, keep them from effecting repairs, or carrying out tasks you have asked them to accomplish.



On Scene Preparations

Circle the Vessel Watch the vessel's movement (pitch, roll) in the seas and determine the effect of wind and current on the distressed vessel's drift rate and lateral movement. Compare it to your own drift. Knowing the different drift rates will help determine the best approach.

Evaluate the location and any abnormal condition of deck fittings.

Confirm the number of persons on board.

Note any unusual conditions that may affect towing procedures, i.e., loose gear, rigging, or debris in the water.

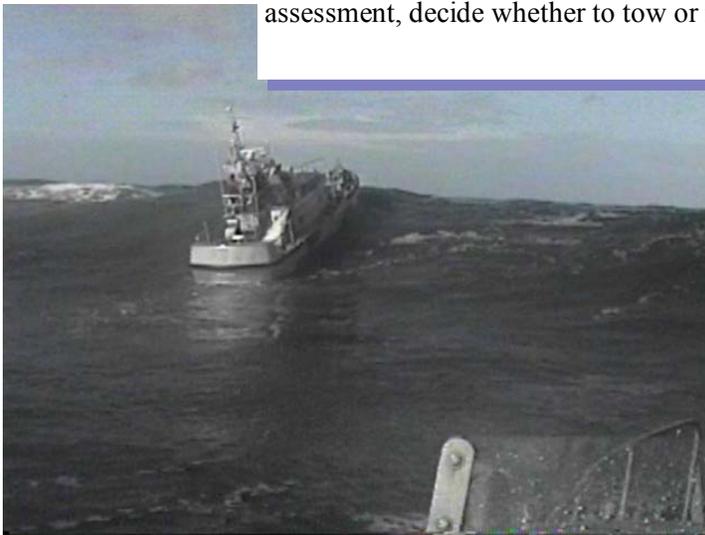
Communicate any concerns to the distressed vessel and direct all personnel on the distressed vessel to put on PFDs.

Decide whether to put one of your crew aboard the distressed vessel.

Decide if it is best to remove the crew from the distressed vessel.

Determine if an equipment transfer (drogue, pump, radio) will be necessary.

After evaluating the on-scene situation and making risk assessment, decide whether to tow or not.



On Scene Preparations Cont.

Communications .

Get details of deck layout and fittings. Ask about the size of chocks and cleats to determine size of towline, bridle or drogue.

Determine if anything has changed since the distressed vessel's initial contact with the operational commander.

Ascertain any sense of heightened urgency.

Ask if the disabled vessel has been towed before and how it was done. This can give you important clues about the boat and potential problems.

Inform the distressed vessel that you will observe conditions and make final preparations before setting up the tow and will provide further instructions then.

Establish emergency procedures and back up communications. As an example; flash lights, wave life jacket or sound a horn if communications cannot be established.

Establish a communications schedule. Stress that you will monitor the frequency at all times and they should contact you if anything changes.

Brief the Disabled Boat Inform the disabled boat of procedures you will use to pass the tow line and tow the boat.



On Scene Preparations Cont.



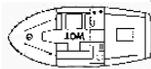
Swells



Setting Up for Approach

Brief Your Crew Let them know you are going to maneuver.

Maneuver Up or Down Swell. Make a short run to get some distance away from the boat. When you are in the field use the power necessary to complete the maneuver. You do not need to make long runs to get maneuvering room, less than 500 yards is generally sufficient.



NOTE: When Maneuvering down swell. While here at the school we want to see you use the heavy weather turn. Run down swell with the seas directly off your stern at full power

Procedure	
1.	Maneuver to put the disabled boat directly off your stern.
2.	Bring up your power to make down swell/ups well run.
3.	Look behind you.
4.	After making your run use the Heavy Weather Turn to come about.
5.	Stop the boat.

Refresher !!



HINT:
On step 4 we tell you to wait until you are 90 degrees through your turn before placing the throttle in reverse. *Use your wake as a gauge.*

Warning:
If you place the throttle in neutral it will allow the propeller to free spin at the speed of the boat. That is much faster than clutch engine speed. When the reduction gear engages at higher speeds it will cause damage and wear.

The heavy weather turn is the fastest way to bring the boat about. It should be used when you are turning 180 degrees and it should not make noises. Improper procedures will damage the boats reduction gear.

Procedure	
1.	Notify your crew!
2.	Look behind you.
3.	Put your helm full to the direction of turn and bring your inboard throttle to clutch ahead.
4.	When you are 90 degrees through your turn place the inboard throttle in clutch reverse. DO NOT STOP IN NUETRAL.
5.	Allow the reduction gear to engage then apply power astern to complete your turn.
6.	Do not over steer your turn!! Then stop your boat.

Towing Approaches

Swells



Wind



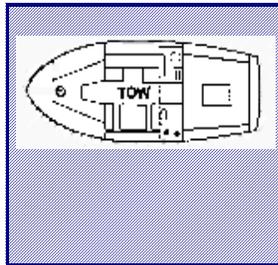
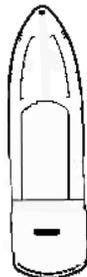
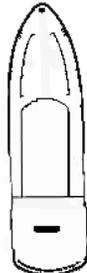
Bow to Swell Approach.

Bow must be kept square to the seas. By keeping your bow square into the sea conditions you will maintain better control of your boat. This position also gives you the safest approach and best visibility of your boat, your crew, the disabled boat, and the sea conditions.

Keep the rudders centered. Use your Rudder Angle Indicator (RAI). By using the RAI you will know exactly where your rudders are set. The 47' MLB has enough power and side force to maintain position using just throttles. In heavy weather attempting a maneuver with the rudder the wrong direction will often begin the chain of errors that may lead to a mishap.

Use the appropriate steering station. Use steering station that will give you the best visibility of the disabled boat. The 47' MLB has steering stations on both sides of the open bridge practice operating the boat from both sides with both steering controls.

Push ahead slowly. From your position station keeping down swell push ahead and approach the disabled vessel. With the 47' MLB you may need to give the boat a brief shot of power using both engines to get moving in without zigzagging. Once you gain steerage way reduce power and move slowly into position. Get feed back from your crew on the approach and whether they will be able to pass a line.



Towing Approaches

Swells



Stern to Swell Approach.

Sea conditions up to 12 feet (non breaking). In larger sea conditions your crew is exposed to larger seas boarding your boat. This is extremely dangerous for your crew. Constant watch must be maintained when operating stern to conditions to protect your crew and to safely pass the towline.

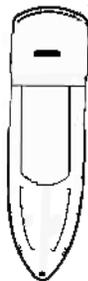
Stern must be kept square to the seas. By keeping your stern square into the sea conditions you will maintain better control of your boat. This position also gives you the safest approach and best visibility of your boat, your crew, the disabled boat, and the sea conditions.

Wind

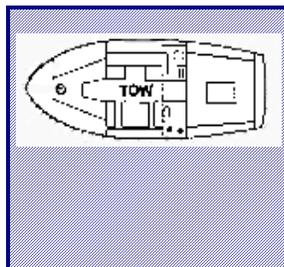
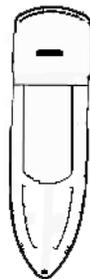


Keep the rudders centered. Use your Rudder Angle Indicator (RAI). By using the RAI you will know exactly where your rudders are set. The 47' MLB has enough power and side force to maintain position using just throttles. In heavy weather attempting a maneuver with the rudder the wrong direction will often begin the chain of errors that may lead to a mishap.

Use the appropriate steering station. Use steering station that will give you the best visibility of the disabled boat. The 47' MLB has steering stations on both sides of the open bridge practice operating the boat from both sides with both steering controls.



Push ahead slowly. From your position station keeping up swell push ahead and approach the disabled vessel. With the 47' MLB you may need to give the boat a brief shot of power using both engines to get moving in without zig zagging. Once you gain steerage way reduce power and move slowly into position. Get feed back from your crew on the approach and whether they will be able to pass a line.



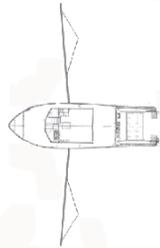
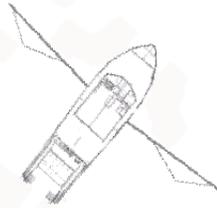
Towing Approaches

Wind

40 kts

Swells

15'



Selection of Towing Approach. Many factors are going to effect your decision on which towing approach to make. Some factors include.

The Prevailing Weather. Stern to approach should not be used in seas larger than 12 feet. In smaller conditions with strong winds the stern to approach may be the better choice. Large seas or breaking seas the bow to approach must be used to protect your crew.

Nature of Distress. Depending on many factors Nature of Distress may effect your approach.

Type/Size of Vessel. Size and configuration will greatly influence your towing approach. A large vessel with high freeboard at the bow may make passing a line to the bow difficult. Many commercial fishing vessels have stabilizing outriggers that must be left down in heavy weather to prevent loss of stability. There is always the skiff with a railer eyebolt.

Hazards. There are potential hazards in any towing evolution. Some serious potential problems that may effect your towing approach could be; nets or lines in the water, rocks or shoals, outriggers and other gear, boat taking on water, logs and debris in the water.

Vessels Attitude to the Winds and Seas. Use the pictures to visualize the different approaches you would have to make for each example.

Set and Drift. Some factors to think about include; getting set into a dangerous area, or the disabled vessel being set onto your boat.

Your Skill and Experience Level Your skill and experience are going to greatly effect your decisions. No two surfmen will see the situation the same or make the exact same decisions in heavy weather.



Towing Approaches



Procedure	
1.	Notify your crew!
2.	Move slowly ahead. Bow square to the swell.
3.	Avoid zig zagging during the approach.
4.	Decrease speed to bare steerageway as you close to <i>optimum position</i> .
5.	Boat must be Stopped before passing the heaving line. (You may need to position yourself below or above optimum position to pass the heaving line)
6.	Move into optimum position to pass the towline.

Optimum Position

Definition– The position taken by the 47 ft MLB which allows the crew the maximum amount of time to pass the heaving line and put the tow line over without getting in a hurry. This position gives the coxswain the ability to see the tow rig attachment point and supervise the crew while passing the tow rig.

Notes



