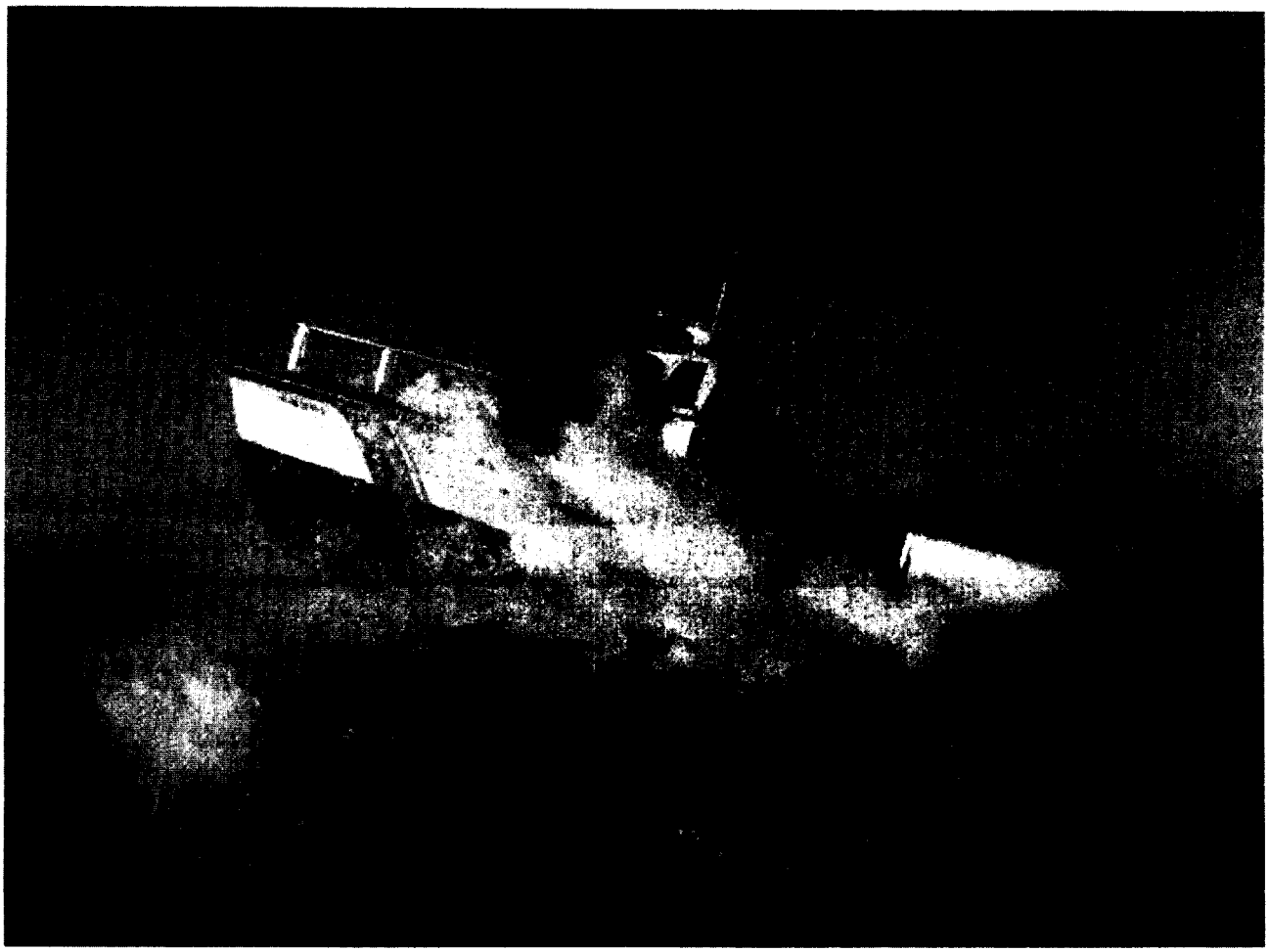
44' MOTOR LIFEBOAT OPERATOR'S HANDBOOK

U.S. Department of Transportation

United States Coast Guard

COMDTINST M16114.3C



U.S. Department of Transportation
United States Coast Guard

Commandant
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COMDTINST M16114.3C
JUL 2 1999

COMMANDANT INSTRUCTION M16114.3C

Subj: 44' MLB OPERATOR'S HANDBOOK

1. PURPOSE. This instruction provides technical orientation, performance characteristics, and basic operating procedures for the 44' Motor Lifeboat (MLB). It also standardizes boat outfit equipment and layout.

2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, commanding officers of headquarters units, assistant commandants for directorates, Chief Counsel, and special staff offices at Headquarters shall ensure adherence to the content of this instruction at all units which operate and/or maintain 44' MLB's. To ensure standardization, there is no command prerogative with regard to the type or location of equipment carried except as noted. All design or structural alterations are prohibited unless specifically authorized by Commandant (G-SEN).

3. DIRECTIVES AFFECTED. This manual cancels the 44' MLB Operator's Handbook, COMDTINST M16114.3B on 01 Oct 1999.

4. DISCUSSION. This handbook contains the information necessary to safely and efficiently operate the 44' MLB. The operational capabilities, limitations, and emergency procedures are clearly stipulated. The fittings, outfit list, and physical characteristics of the boat are pictured and described in detail. This publication is directive in nature and applies to all 44' MLB crews, operational, and supervisory commands. This handbook revision serves the following purpose:

   a. It incorporates the numerous changes to the 44' MLB and its authorized outfit which have occurred over the past seven years.

   b. It reformats the manual into information mapping style for easy reading and reference.

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A																										
B		8	10		*			2	5					10												
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c. It incorporates into Chapter 5 the requirements, responsibilities, and actions to take upon the occurrence of disabling casualties as well as restrictive, major and minor discrepancies. This change is consistent with the new Coast Guard Boat Readiness and Standardization Program which becomes effective on 01 Oct 1999.

d. It provides an inclusive list and definition of each disabling casualty, restrictive and major discrepancy in Appendices F and G.

e. It provides the standardized requirements of a full power trial for the 44' MLB in Appendix H.

5. PROCEDURE. District, operational and unit commanders for all 44' MLB units shall ensure the procedures and limitations detailed within this instruction are followed. Forward any comments, corrections, recommendations and questions regarding this handbook to the National Motor Lifeboat School in accordance with Section 1.C. of this manual. Design and structural change requests shall be submitted as outlined in the Naval Engineering Manual, COMDTINST M9000.6 (series).

6. POLLUTION PREVENTION (P2) CONSIDERATIONS. Pollution Prevention considerations were examined in the development of this directive and have been determined to be not applicable.

ERNEST R. RIUTTA
Assistant Commandant for Operations

RECORD OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	DATE ENTERED	ENTERED BY

Table of Contents

CHAPTER 1: INTRODUCTION

CHAPTER 2: BOAT CHARACTERISTICS

CHAPTER 3: BOAT SYSTEMS AND COMPONENTS

CHAPTER 4: THE CREW

CHAPTER 5: OPERATIONS

CHAPTER 6: MISSION PERFORMANCE

CHAPTER 7: EMERGENCY PROCEDURES

APPENDIX A: 44' MOTOR LIFEBOAT OUTFIT LIST & STOWAGE PLAN

Chapter 1
Introduction

Overview

Introduction

This handbook contains information necessary for the safe and efficient operation of the 44' Motor Lifeboat (MLB). Operational capabilities, limitations, and emergency procedures are clearly defined. The fittings, outfit list (Appendix A), and physical characteristics of the boat are pictured and described in detail.

In this chapter

This chapter contains three sections.

Section A. Warnings, Cautions, And Notes

A.1. General

The following definitions apply to Warnings, Cautions, and Notes found throughout the handbook.

A.2. Warning

WARNING

Operating procedures or techniques which may result in personal injury or loss of life if not carefully followed.

A.3. Caution

CAUTION !

Operating procedures or techniques which may result in damage to equipment if not carefully followed.

A.4. Note

NOTE

An operating procedure or technique which it is considered essential to emphasize.

Section B. Facility Manager

B.1. General

Commandant (G-OCS) is the facility manager for the 44' MLB. The 44' MLB is a standard boat as defined in the Boat Management Manual, COMDTINST M16114.4 (series), and the Naval Engineering Manual, COMDTINST M9000.6 (series). COMDT (G-OCS) also oversees the National Motor Lifeboat School (NMLBS). In addition to training coxswains to operate the MLB, NMLBS provides expertise in all aspects of the boat's operation and maintenance. NMLBS reviews the boat, its equipment, crew procedures, operational reports and technical manuals continuously to update this information. NMLBS also provides expertise for standardization and inspection through the MLB Standardization Team.

Section C. Changes

C.1. General

COMDT (G-OCS) promulgates this manual and its changes. Submit recommendations for changes to NMLBS via standard letter or electronic mail.

The address for the NMLBS is:

Commanding Officer
U. S. Coast Guard
National Motor Lifeboat School
PO Box 640
Ilwaco, WA 98624-0460

Phone: (360)642-2384

Section D. Action

D.1. General

Operating and supervisory commands and boat crews will comply with the procedures and limitations in this publication and any duly issued changes.

D.2. Configuration control

Configuration control for the 44' MLB is critical for standardization of equipment and safety operations. The boat's speed, performance, and range characteristics are extremely sensitive to excess weight.

NOTE

To maintain fleet wide standardization, unit commanders shall not change or vary the type or location of equipment carried except where noted. Design or structural alterations are prohibited unless specifically authorized by the Office of Naval Engineering, Commandant (G-SEN).

NOTE

Prototype testing of 44' MLB configuration changes may only be carried out with the specific authorization of the Office of Naval Engineering, Commandant (G-SEN). Under most circumstances, prototype testing is done at the National Motor Lifeboat School.

Chapter 2
Boat Characteristics

Overview

Introduction

This chapter describes the features of each compartment in the boat. A detailed description of each system may be found in Chapter 3. Since most boats differ from the standards contained in this manual, consider initiating changes to conform with these standards.

NOTE

All illustrations in this operator's handbook are for familiarization purposes only. The placement of machinery and equipment depicted in illustrations may not reflect the proper placement and installation of equipment and machinery. Refer to the appropriate blueprint, technical publication or enclosure to this handbook for proper placement.

In this chapter

This chapter contains ten sections.

Section A. General Description

A.1. General

The Coast Guard 44' motor lifeboat (MLB) is a high endurance boat designed to perform search and rescue missions in adverse weather and sea conditions. It is self bailing and self righting. Built by the Coast Guard Yard, Curtis Bay, Maryland, the first 44 foot MLB was placed into service in 1961.

A.2. Alterations

Appendix B to this manual is an index of applicable boat alterations (BOATALTS). BOATALTS issued after the date of this revision supersede information in this manual.

A.3. Characteristics

The 44' MLB has a steel hull with a semi-enclosed coxswain's platform. The main deck is directly over the engines. An airtight survivor's cabin is located aft. The boat has a semi-displacement, planing hull with buoyancy concentrated in the bow and stern portions. The skeg runs from Frame 9, just below the coxswain console, to a point midway beneath the aft survivor's cabin, where the boat's deepest draft of 3 feet 6 inches is reached.

A.4. Superstructure

The boat's superstructure (forward cabin top, pilothouse, and aft survivor's cabin) is constructed of aluminum alloy. Beginning at Frame 4, the forward cabin top rises, extends horizontally aft to Frame 8 where it extends vertically to form the forward portion of the pilothouse. The semi-enclosed pilothouse superstructure extends from Frame 8 to Frame 12. The main deck gives way to a well deck at Bulkhead 15; the well deck terminates at Bulkhead 17, where a watertight survivors cabin is fitted to the deck. The survivors cabin then extends aft to Bulkhead 21. The highest fixed point on the boat (13 feet, 3 inches) is the radar antenna atop the pilothouse located at Frame 10 ½. The mast, which folds aft, has antennas fixed atop which extend to a height of 23 feet, 3 inches.

A.5. Boat specifications

Feature	Specification
Length	44' 1-1/2"
Beam	12'8"
Freeboard, Bow	6'2"
Freeboard, Stern	4'7"
Draft	3'6"
Fixed height of radar antenna above waterline	13'3"
Height of mast above waterline (Top of ADF Antenna)	23'3"
Displacement, full load	39,500 lbs
Displacement, less cargo	33,360 lbs
Engines	Detroit Diesel Model 6V-53
Horsepower, maximum each engine	185HP @ 2800 RPM
Maximum Speed	14KTS
Fuel Capacity (95%)	313 gal, #2 Diesel
Range	215 NM at 2380 RPMs
Minimum Crew Size	3
Passengers	21
Endurance, at maximum speed	11.9 Hours

Section B. The Hull

Overview

Introduction

The hull is constructed of $^{3}/_{16}$-inch Corten steel. Frames are spaced at 18 to 22 inch intervals to provide structural reinforcement. The MLB has fixed fenders or "rub-rails" to protect the exterior of the hull and other vessels during alongside work.

In this section

This section contains the following information.

Watertight Spaces

B.1. Watertight spaces

The hull of the 44'MLB is divided into nine watertight spaces:

1. The forepeak, from bow to Bulkhead 1.
2. The forward passenger compartment, from Bulkhead 1 to Bulkhead 5.
3. A void under forward passenger compartment.
4. The mess deck, from Bulkhead 5 to Bulkhead 9.
5. A void under the mess deck, from Bulkhead 5 to Bulkhead 9.
6. The engine space, from Bulkhead 9 to Bulkhead 15.
7. The well deck void, from Bulkhead 15 to Bulkhead 17.
8. The survivors cabin, from Bulkhead 17 to Bulkhead 21.
9. The lazarette, from Bulkhead 21 to the stern transom.

Hull Reference Points

B.2. General

Numbering the frames from fore to aft provides a reference for designating various locations on the craft.

B.3. Spray rails

Spray rails are welded to the hull just above the waterline from the bow to Frame 6, port and starboard, and on the stern quarters from Bulkhead 17 to 21.

B.4. D-rings

D-rings are welded to the hull at Frames 9, 12, 15, and 18 for the installation of 2" circumference double braid nylon grab-lines.

B.5. Visual identification

Visual identification of the boat is located on each side of the hull between Frames 1 and 9. This includes:

- the boat's number in 6 inch black numbers,
- a Coast Guard identification stripe with a 13 inch emblem, and
- "U. S. Coast Guard" in 6-inch black letters.

The boat's number in 6 inch black block letters is also displayed on the stern. Its homeport in 3 inch black block letters is displayed on the aft survivor's compartment bulkhead above the towing flood light.

B.6. Fixed fenders or "rub rails"

Fixed fenders or "rub-rails" are installed at the gunwale level from the bow to Frame 8, at main deck gunwale level from Frame 7 to bulk head 21, and around the stern to Bulkhead 21. Each fender is a hollow, D-shaped, synthetic rubber tube 4 inches in diameter. They are attached to studs which are welded to the hull. A continuous stainless steel washer plate with plastic shoulder bushings and nylock nuts are used to secure the fenders.

B.7. Galley sink discharge

The galley sink discharges overboard on the starboard side just forward of Frame 8.

B.8. Fathometer

The fathometer transducer is located between Frames 9 and 10.

B.9. Fire main and eductor

The fire main and eductor overboard discharge is located at Frame 12 on the starboard side.

B.10. Main engine sea chest The main engine sea chest is located between Frames 13 and 14 about 6 inches to port of the keel.

B.11. Twin propeller shafts Twin propeller shafts exit the hull through cutlass bearings located between Frame 13 and Frame 14.

B.12. Curved exhaust line A curved exhaust line crosses the well deck void and exits the hull at Frame 16.

B.13. Deepest draft The boat's point of deepest draft (3 feet, 6 inches) is located at Frame 19, below the after quarter bitts.

B.14. Propeller shaft struts Propeller shaft struts are welded to the hull between Frames 19 and 20.

B.15. Propellers The propellers lie directly between Frames 20 and 21.

B.16. Rudder posts Rudder posts, constructed of 2-½ inch diameter solid steel, penetrate the hull just aft of Bulkhead 21.

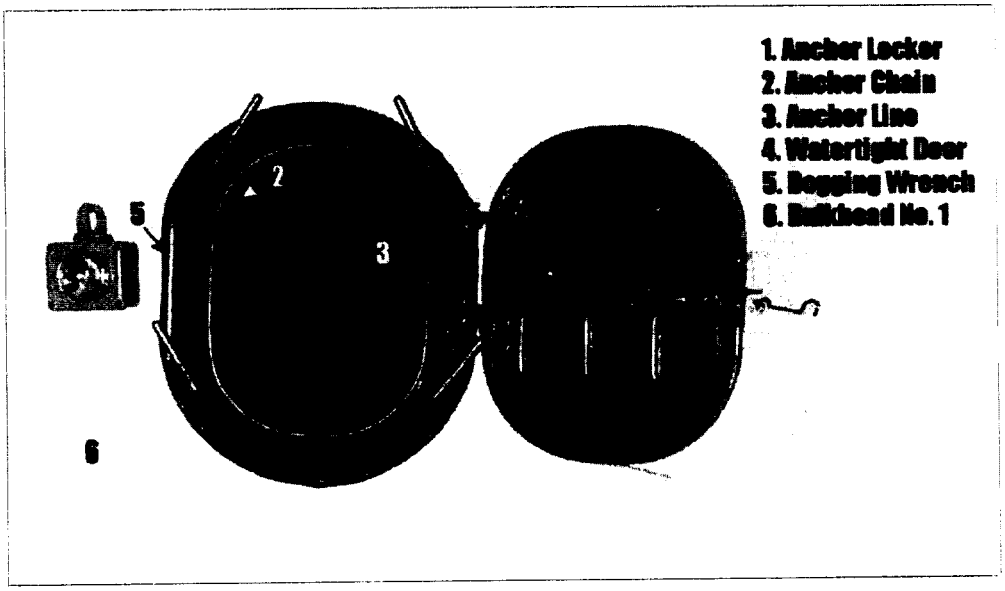


Figure 2-1
Forepeak and Anchor Locker

Section C. Forepeak

C.1. Access

The forepeak may be accessed through a watertight door which penetrates Bulkhead 1 from the forward passenger compartment. A securing hook on the starboard side of the forward compartment holds this door open.

C.2. Anchor line

An anchor line reel, holding 300 feet of 3 inch double braided nylon (DBN) line, hangs from brackets on the overhead. A thimble is spliced to the end of the anchor line to which 9 feet of 1/2 inch galvanized BBB anchor chain is attached. The line feeds from the bottom of the reel to a hook welded to the hawse pipe expansion plug on the overhead. Small stuff secures the BBB chain to the reel to prevent it from vibrating loose in the forepeak.

Section D. Forward Compartment

Overview

Introduction

This section describes, in detail, the features found in the forward compartment of the 44' MLB.

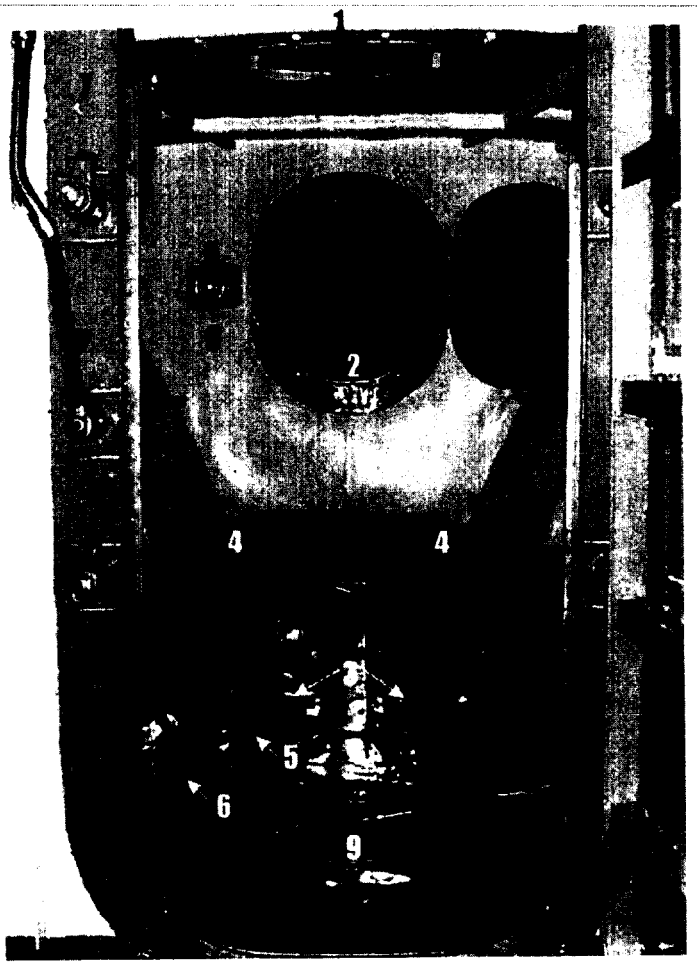
In this section

This section contains the following information.

Exterior

D.1. Escape hatch	A 24-inch square, quick-acting, watertight escape hatch is located in the deck at Frame 2. A safety latch secures the hatch when in the open position.
D.1.a. Operating from above	A T-handle wrench is used to open and close the hatch from above. The T-handle wrench is stowed in the mess deck cubby hole compartment.
D.2.b. Operating from below	A handwheel is used to operate the hatch from below.

Interior



1. Passenger Space
2. Anchor Locker
3. Port & Stbd Seat Lockers
4. Seat Belts
5. Inport Compartment Heater
6. U/W Compartment Heater (Space Heater)
7. Quick Acting Watertight Door (Blkhd 5)
8. Battle Lantern
9. Scuttle

Figure 2-2
Forward Compartment (Interior)

D.2. Battle lantern

A battle lantern is mounted on the port side of Bulkhead 1. A dogging wrench is located on the port side of the hatch to the forepeak.

D.3. Bracket for chemical fire extinguisher

On Bulkhead 5, to the port of the watertight door, is a welded bracket for mounting a 5-pound dry chemical fire extinguisher.

D.4. Seat/Lockers

Conforming to the shape of the hull, seat/lockers run from Bulkhead 1 to Bulkhead 5. Seat cushions cover storage areas for 7 adult and 3 child Type 1 PFDs, 4 blankets, and 2 pillows. Cushions and seat boards are held in place by automotive type seat belts which may also be used to secure passengers in rough weather.

D.5. Underway heater

Midway beneath the port seat is a 24-volt circulating hot water space heater.

NOTE

The heater is supplied with water from the port engine. If the heater develops a leak, a valve on the in-take side of the heater can be used to shut off its supply of water. A valve on the outboard side of the port engine can shut off water to the entire heating system.

D.6. 110 volt "In port" heater

Midway beneath the port seat, forward of the underway heater, is a 110 volt "in port" heater. The heater's thermostat is mounted on the port side of Bulkhead 5.

D.7. Scuttle

An 18 inch scuttle is located on the centerline at Frame 3. The scuttle provides a watertight access to the bilge for inspection. The bilge runs from Bulkhead 1 to Bulkhead 5.

D.8. Deck

The deck is covered with deck matting. The bulkheads and overhead are covered with Ensolite foam.

D.9. Overhead lights

Two overhead lights in the compartment are controlled by switches on the lights themselves. One of the lights should have a red lens for night operations.

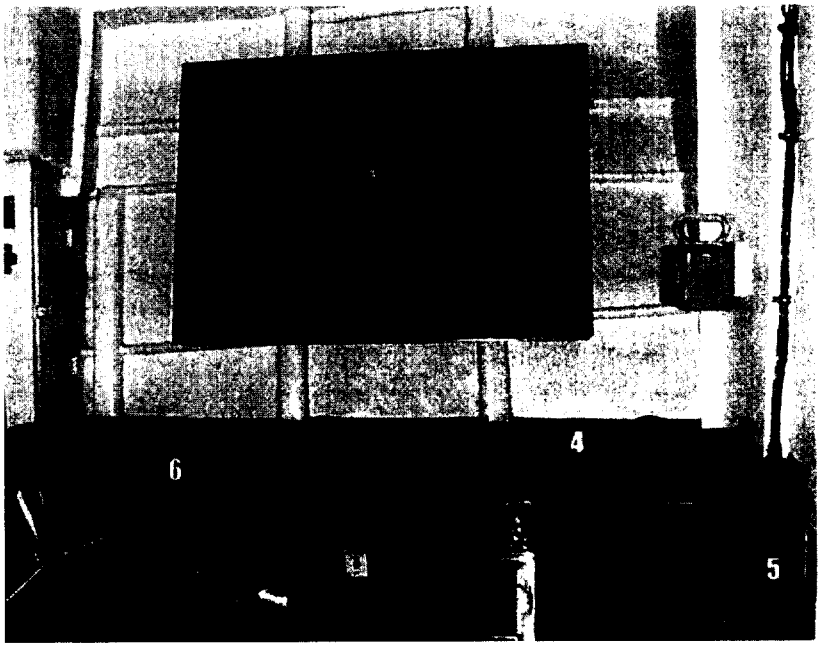
Section E. Mess Deck

E.1. Access

Access to the mess deck is gained through a quick-acting watertight door in Bulkhead 9 to port of the coxswain console. A four step aluminum ladder with safety treads and a port and starboard handrail leads to the mess deck. A marine clock is located on the bulkhead to the port side of the ladder.

E.2. Chart table

Attached to steel brackets and recessed under the port side of the main deck is a bulkhead mounted chart table that folds down (See figure 2-3). Charts and navigation equipment are stored in this table.



1. Chart Table
2. Battle Lattern
3. Cubby Hole
4. Mess Deck Seat
5. 5-lb. Dry Chemical Dry Fire Extinguisher
6. Seat Belts

Figure 2-3
Mess Deck and Chart Table

E.3. Cubbyhole storage space

Extending from Bulkhead 9 to Frame 8 is the cubbyhole storage space. This space provides storage for:

- navigation publications,
- binoculars,
- the boat's bell,
- mouth-operated foghorn,
- T-handle wrench,
- a hand crank for tow reel,
- spare bulbs and fuses,
- a flashlight, and
- Portable VHF-FM radio.

E.4. HF SSB Transceiver

Between the cubbyhole and chart table, mounted to brackets, is a HF-SSB Transceiver (except on NMLBS and Ninth District boats). A high voltage warning sign is mounted on the port bulkhead near the antennae coupler for this radio.

WARNING The antennae coupler can produce high voltage during radio transmissions.

E.5. Seat/locker

A seat/locker extends forward from Frame 8 to Bulkhead 5. Under this seat are the "in port" and underway compartment heaters, and the damage control (DC) kit. On the aft face of the seat is another small void which lies directly below the cubbyhole. This space should be checked periodically to insure the fuel lines running through this space are not deteriorating.

E.6. Bulkhead 5

Access to the forward passenger space is through a quick-acting, watertight door located centerline on Bulkhead 5 (See figure 2-4). A hook on the starboard bulkhead holds this door open. A 5-pound dry chemical fire extinguisher is mounted on Bulkhead 5 to the port side of this door. A battle lantern is also located on the port side of Bulkhead 5.

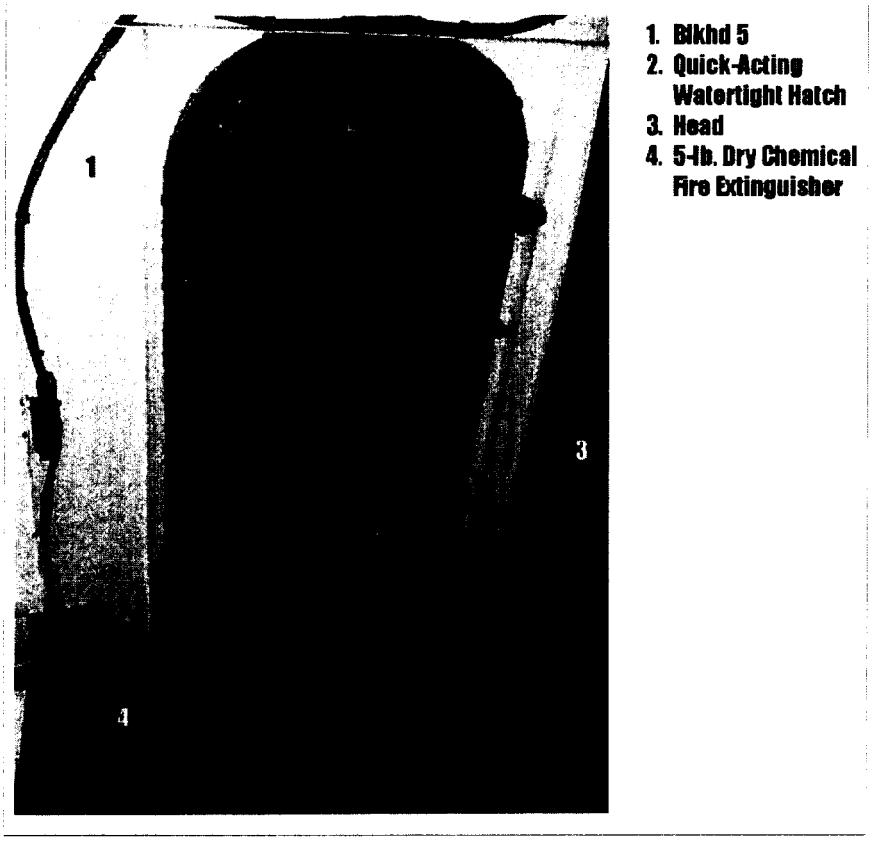


Figure 2-4
Head and Bulkhead 5

E.7. Void space

An 18 inch scuttle provides access to the void at Frame 6. In the void space, mounted to frames and used for ballast, are lead blocks weighing 600 pounds. The after part of this void, between Frame 7 and Bulkhead 9, is occupied by the fuel tank. An inspection or access plate for the fuel tank is located on the deck between the scuttle and Bulkhead 9.

E.8. Crew's head

The crew's head is located to the starboard side of the compartment between Bulkhead 5 and Frame 7. The marine "porta-potti" is carried in the crews head. An engineer's tool kit is located in the head on a fixed bracket. Also installed/stowed in the head is:

- 2 12v power supply units,
- Loudhailer power supply, and
- Boat crew safety belts, 5 each.

Engine operating and securing instructions are mounted on the door to the crew's head.

E.9. Galley area

A stainless steel sink with countertop follows the starboard hull contour from Frame 7 to Bulkhead 9 (See figure 2-5). The aft half of the sink cabinet has a drawer. Located below is a storage compartment. Engineering spare parts and emergency rations are kept in this storage space. The compartment forward of this provides access to the sink drain. Overboard discharge and boat pyrotechnics are stowed in this space. A 3 gallon stainless steel jug is mounted above the sink, and a paper towel dispenser is on the aft bulkhead of the crew's head. Above the sink is a 10-man first aid kit. At Bulkhead 9, a circuit breaker panel is mounted at eye level. Two hot cups are mounted above the counter top at Bulkhead 9. An ammeter and volt meter are mounted inboard of the circuit breaker panel on Bulkhead 9. Inspection plates provide access behind the coxswain's console.

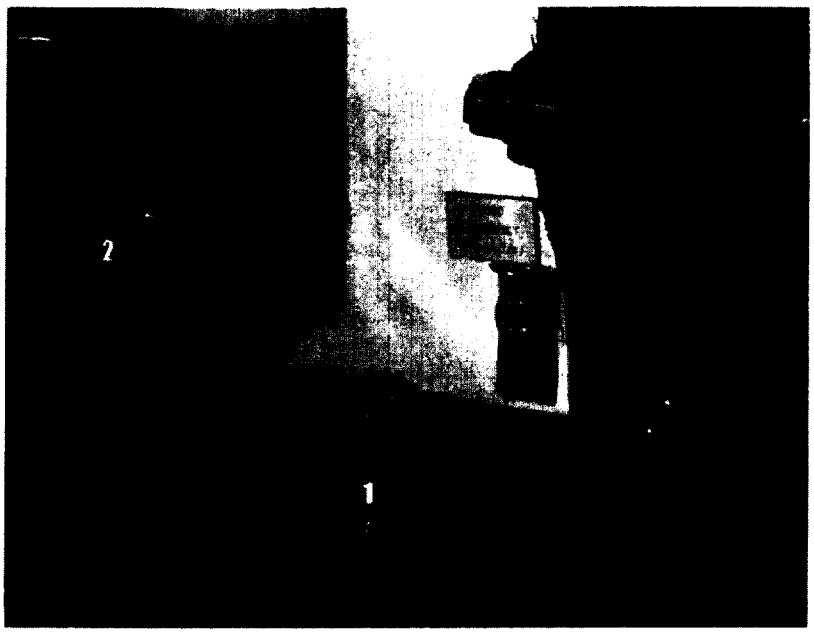
Gear stored in both stowage cabinets needs to be secured to the stainless steel cabinet floor with seat belts.

1. 24–V DC Panel
2. Amp Meter
3. Volt Meter
4. Hot Cups
5. Galley Sink
6. Coxswain Console Access Plate

Figure 2-5
Galley Area

E.10. Sounding Tube

On the deck, inboard of the sink, is a 2-inch sounding tube for the fuel tank (See figure 2-6). The sounding stick is stowed inboard of the ladder.



1. **Fuel Tank Sounding Tube**
2. **Galley Sink/Cabinet**

Figure 2-6
Fuel Sounding Tube

E.11. Access to engine room

Access to the engine room is gained through a quickacting, watertight door that penetrates Bulkhead 9. The door has a port for viewing the engine space. A "hearing protection" placard is mounted on Bulkhead 9 outside the engine room hatch and two pairs of hearing protectors are stored over the inboard handrail leading into the compartment.

E.12. Fire extinguishers and fuel cut offs

Two pipes (a fill pipe and a vent) are located under the ladder, outboard of the door. Brackets over these pipes support a 5-pound CO_2 fire extinguisher and the fixed Halon fire extinguisher system. Warning and operation placards are mounted above the Halon system on Bulkhead 9. Two emergency fuel cut-off stops, one for each engine, are located on either side of the hatch to the engine room.

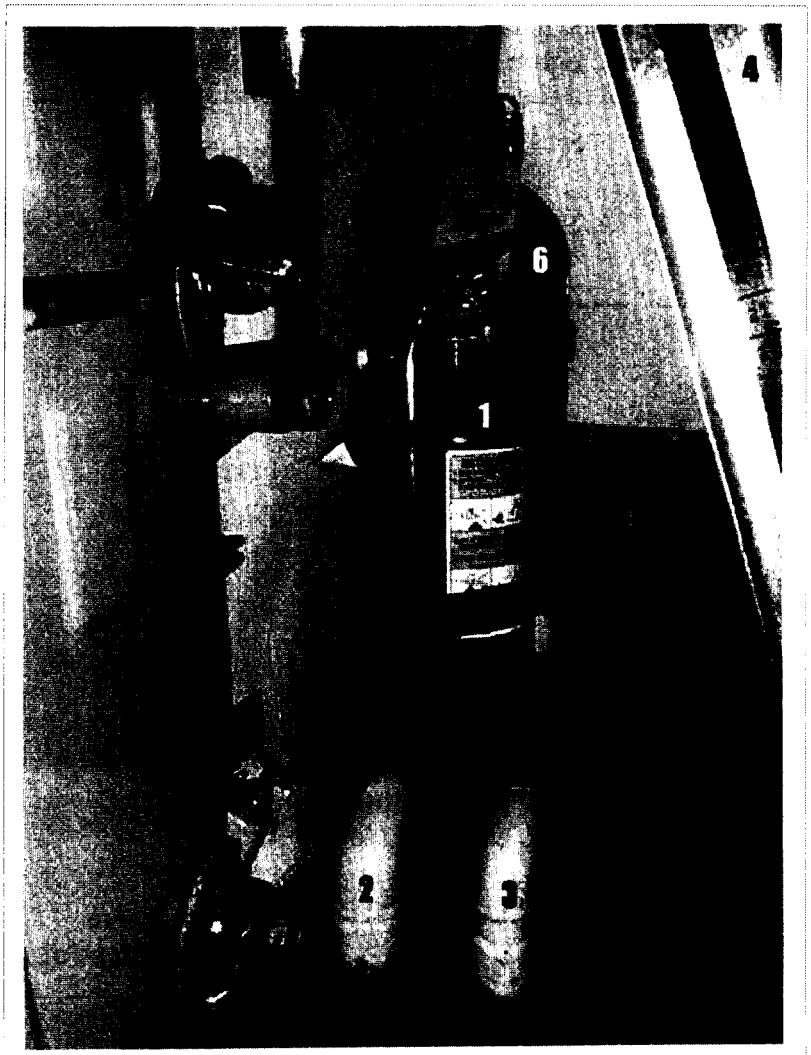


Figure 2-7
Mess Deck Fire Extinguishers

E.13. Insulation Compartment bulkheads, hull interiors, and the overheads are covered with Ensolite foam insulation. The insulation is painted with Devflex for preservation and further soundproofing. The mess deck is covered with rubber matting. At least one light in the compartment should be covered with a red lens for night operations.

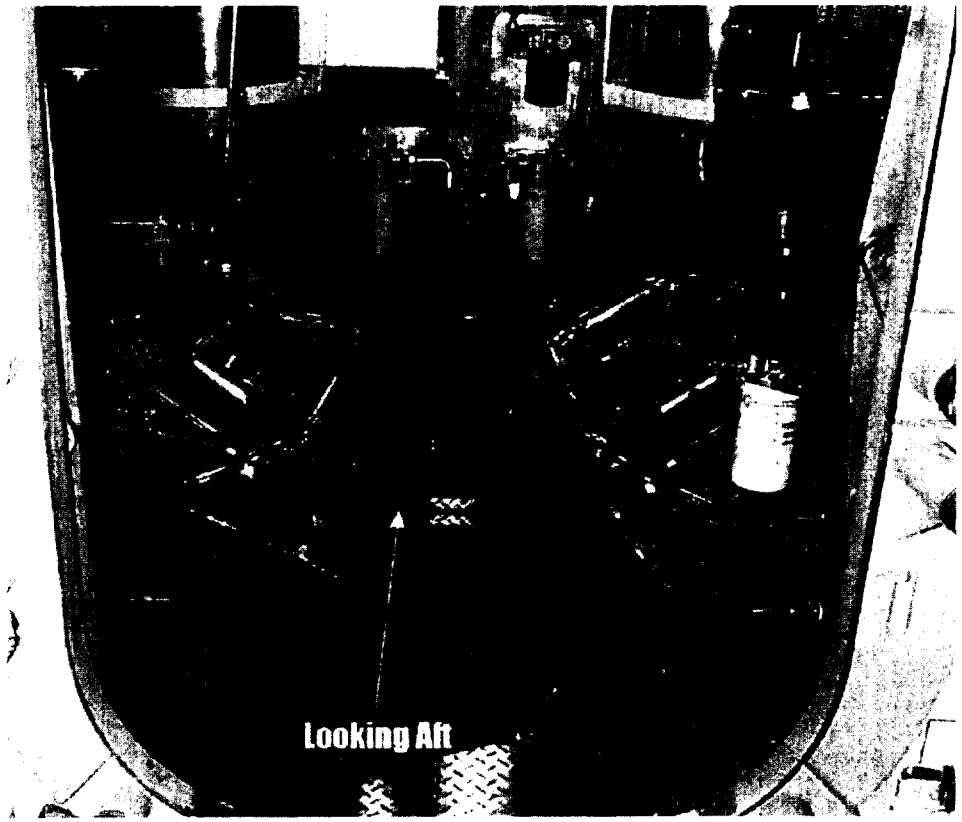
Section F. Engine Room

F.1. Access

Access to the engine room is gained through a quick-acting watertight door at Bulkhead 9. The engine space extends from Bulkheads 9 to 15.

F.2. Engines

Two General Motors Detroit Diesel model 6V-53 engines are mounted from Frame 10 to Frame 13 (See figure 2-8). Each engine is a 6-Cylinder, 2-Cycle marine diesel. Each 318 cubic inch displacement engine generates 165 hp at a cruising speed of 2,380 RPM and 185 hp at the maximum of 2,800 RPM. The engines come in separate port and starboard versions. The starboard is right rotating and the port left rotating. Hot starts are located on the right side of each engine.



1. Stbd Engine
2. Port Engine

Figure 2-8
Engine Room

F.3. Port engine Besides main propulsion, the port engine (See figure 2-9) also serves to operate the following boat systems.

1. Fire Pump
2. Fire Main
3. Port Engine

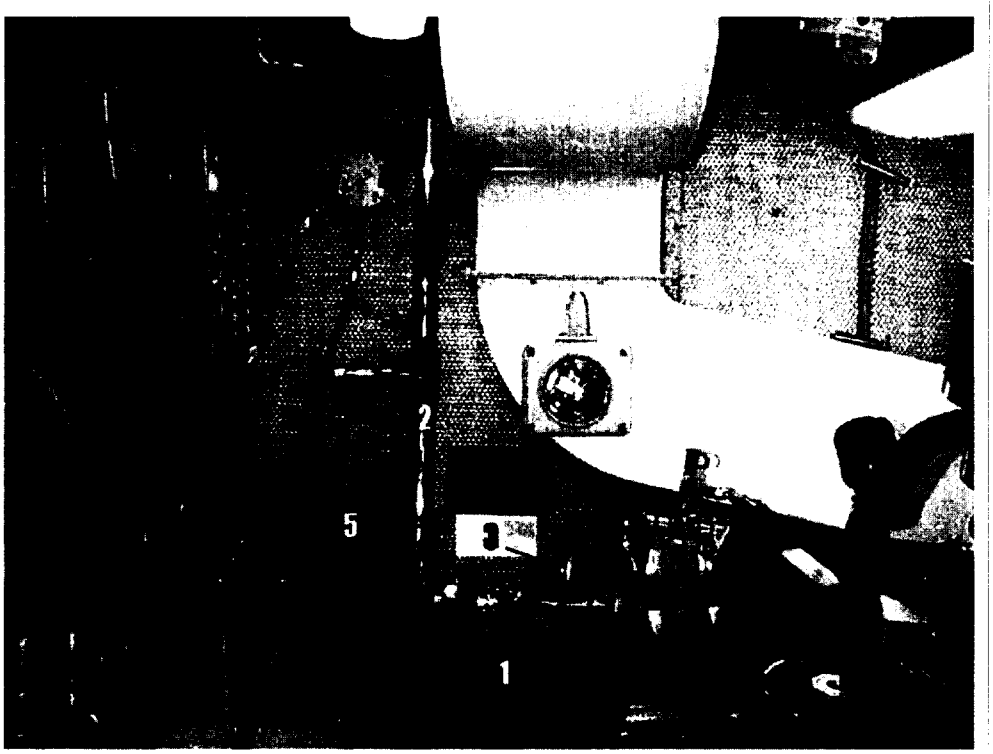
Figure 2-9
Port Engine, Fire Fighting Equipment

F.3.a. Fire pump

Mounted on the forward face of the port engine is a power take-off for a belt-driven single stage centrifugal fire pump. The pump is located in the bilge area, inboard of the port engine. Piping extends from the fire pump, under the deck plates, to the starboard hull and exits the main deck aft of Frame 9. A pressure gauge and securing valve are mounted to this riser at eye level next to the piping. This pump serves a dual purpose and can also act as a bilge pump by using the eductor (See figure 2-10) located on the starboard hull. It extends from the fire main, through a valve and an eductor to an overboard discharge between Frames 11 and 12. A flexible eductor suction hose extends into the lowest section of the engine compartment bilge, a foot strainer is attached to the end to prevent clogging. Eductor warning placard and oil discharge placards are mounted near the eductor.

CAUTION !

An improperly operated eductor can flood the compartment. Do not operate the eductor unless the compartment is monitored.



1. Bilge Eductor
2. Fire Main
3. Educator Overboard Discharge Value
4. Fire Main Pressure Gauge
5. Battery Rack Starboard Side
6. Hydraulic Steering Gauge

Figure 2-10
Eductor and Fire Main

F.3.b. Air compressor

The port engine also drives an air-compressor located on its aft gear train housing. This pump fills a receiver mounted to Bulkhead 15 directly above the port vent. Air supply piping extends to the coxswain's flat and supplys compressed air to operate the horn and windshield wipers. The air pressure relief valve and the pressure gauge are located on the air receiver.

F.4. Starboard Engine

The starboard engine (See figure 2-11) powers a hydraulic pump which is mounted on its aft gear train housing. It maintains operating pressure for the hydraulic steering system. The pressure regulator/flow divider for this system is mounted to Bulkhead 9, just starboard of the watertight door. The pressure gauge is located on the starboard bulkhead next to the fire main pressure gauge. The hydraulic hoses extend from the pump to the orbital in the steering console, then aft along the starboard hull where they penetrate Bulkhead 15. A hydraulic fluid ($2075^{TH)}$ steering reservoir is mounted aft. On earlier models of the MLB, it is located above the starboard vent near Bulkhead 15. On later models it is starboard of the centerline on Bulkhead 15, just below the overhead.

NOTE

In accordance with the Naval Engineering Manual, flammable fluid hoses are required to be replaced every 8 years. A metal tag indicates the replacement date.

NOTE

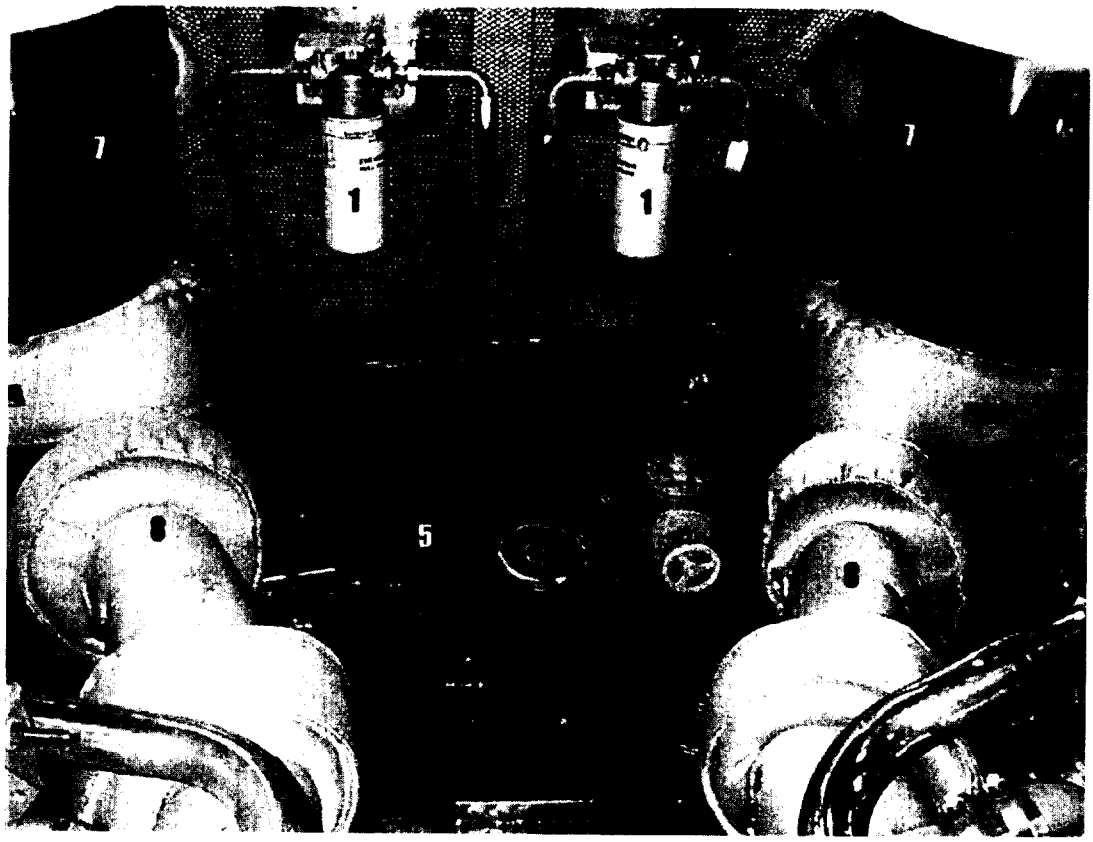
Illustrations in this handbook are for familiarization purposes only. For exact placement of mechanical equipment refer to the appropriate blueprint.

1. Steering Pump
2. Starboard Engine

Figure 2-11
Starboard Engine, Steering Pump

F.5. Sea chest

The sea chest is located between Frames 13 and 14 on the port side of the keel (See figure 2-12). Sea suction valves, duplex strainers and supply piping extend from the sides of the sea chest to each engine and muffler. Piping for a de-icing and shaft cooling system continue from each muffler cooling supply line to the stern tubes and duplex strainers. A sea chest air vent valve and piping extend from the sea chest to the port well deck. A sea suction valve with a simplex strainer and 2-½ inch piping extends forward to the fire pump.



1. Port/Stbd Engine Oil Filters
2. Port/Stbd Engine Duplex Sea Strainers
3. Sea Chest Air Vent Valve
4. Sea Chest De-Icing Valve
5. Sea Strainer De-Icing Valve
6. Fire Main Sea Chest Valve
7. Port/Stbd Engine Mufflers
8. Exhaust Lines
9. Bulkhead 15
10. Stbd Engine Sea Chest Valve

Figure 2-12
Sea Chest

F.6. Engine gauges

Engine gauges (See figure 2-13) are mounted above each engine on a display panel. The gauges show the internal water temperature, oil pressure, and drive oil (reduction gear oil) pressure. The outer rim of each gauge is marked in green for normal ranges, and red for abnormal ranges. These gauges are visible from the mess deck through the porthole in the watertight door. Attached to the overhead are nine 24V DC watertight light fixtures. They are attached at Frames 10, 11, 12, and 13. White lens covers should be present within this compartment. Engine control cables run from the after portion of the engines, to Bulkhead 9 in overhead conduit tubing. The cables join together and proceed upward through the overhead to the engine controls on the coxswains flat.

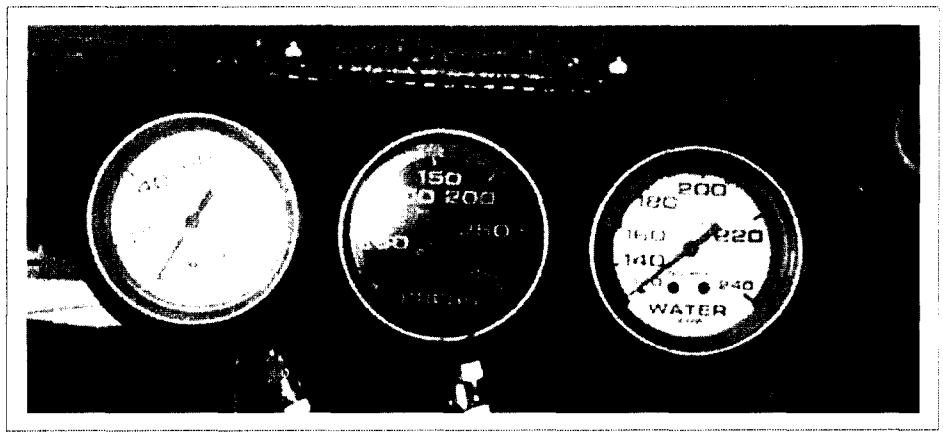
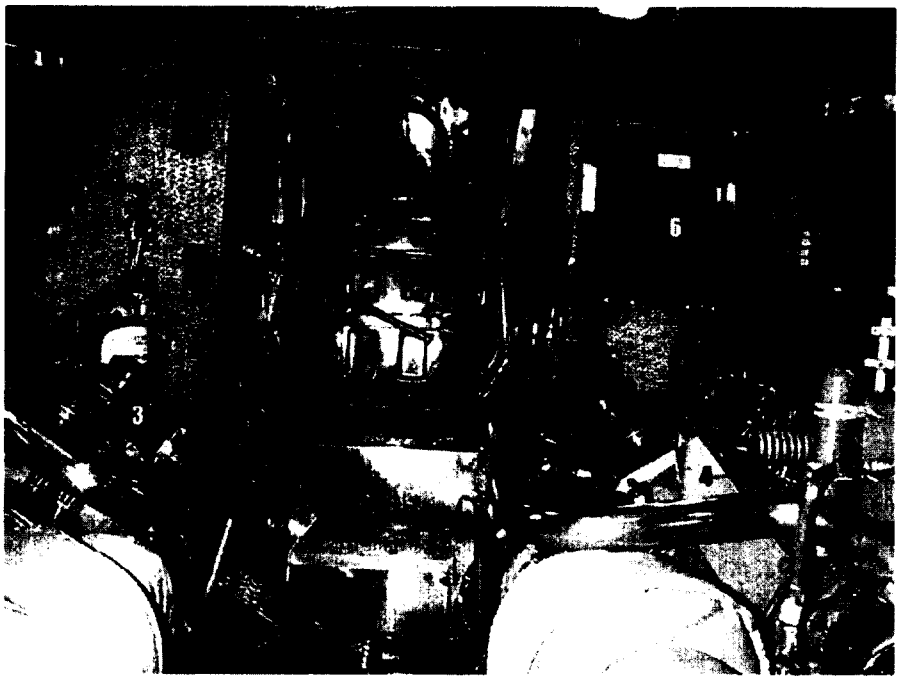


Figure 2-13
Engine Gauges

F.7. Forward bulkhead

The emergency fuel shut-off valves for the port and starboard engines are located on each side of the engine room step tread at Bulkhead 9 (activation handles for these emergency fuel shut-off valves are in the mess deck). Directly above these valves are the fuel return valves, which are lock wired open. Immediately to port of the watertight door is the fuel tank stripping pump. Above the stripping pump is an AC electrical outlet. The Racor fuel filters are outboard of the stripping pump and positioned with their top no higher than the fuel tank. This positioning aids in the priming of the filter canisters. A battery charger is mounted to the bulkhead above, and outboard of the fuel filters. On the starboard side above the hydraulic steering pressure regulator is the AC circuit breaker panel for hot starts, battery charger, inport heaters, engine room inport lighting and the AC outlet. Next to the AC panel are the engine alarm safety switches. Below the alarms are the batteries. The batteries sit in two different battery trays mounted at different levels on the bulkhead. The batteries are wired in series providing 24V DC. The fathometer transducer is aft of Bulkhead 9 on the port side of

the keel.



1. Bulkhead 9
2. Quick-Acting Watertight Door
3. Port Engine
4. Starboard Engine
5. Fuel Stripping Pump
6. AC Electrical Panel

Figure 2-14
Engine Room (Forward Bulkhead)

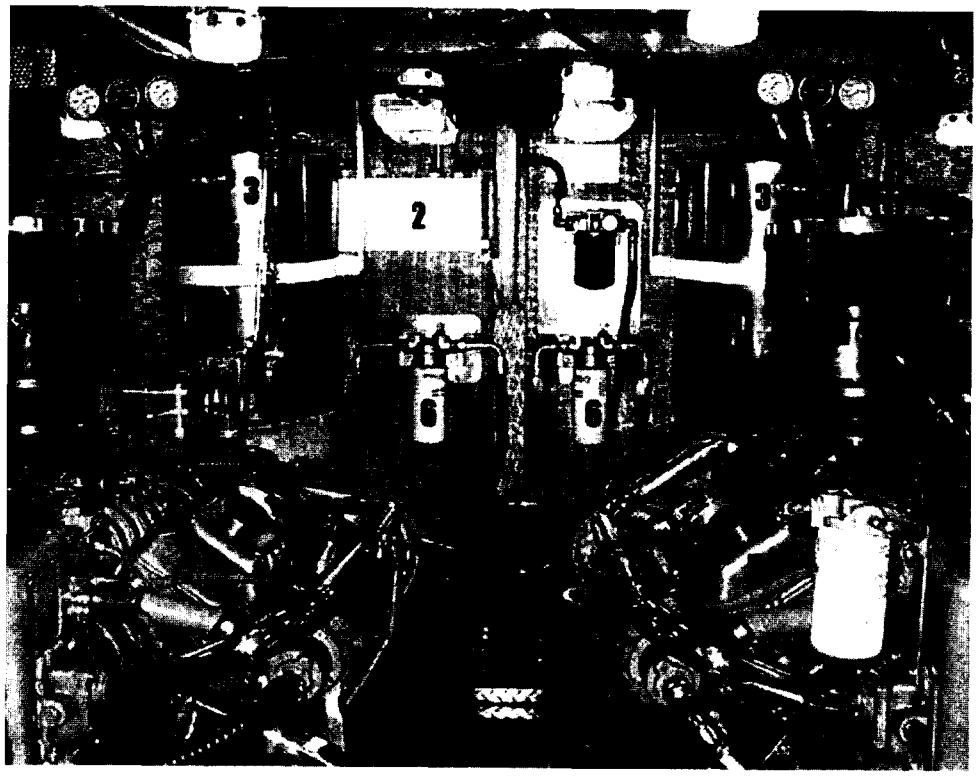
F.8. Air circulation

Fresh air supply ducting extends from the airlifts on the coxswain flat, along the port and starboard hull to about Frame 13. An exhaust blower with solid piping extending into the bilge is on the port ducting. A battle lantern is mounted on the starboard air vent facing athwartships at about Frame 10.

F.9. After bulkhead

A spare 5-gallon can of 2104 lube oil is carried on the starboard side of Bulkhead 15 (See figure 2-15), above or below the air vent depending on location of the hydraulic tank. Two exhaust muffler outlets exit Bulkhead 15 behind the engines. A sluice valve, located just starboard of centerline is used to drain water from the well deck void. A sluice valve placard with 2-inch letters is mounted to the bulkhead next to the valve. Between the sluice valve and the hydraulic reservoir, mounted on either side of centerline, are two main engine lube oil filters. Both port and starboard shaft logs exit the engine room at Bulkhead 15 where the bulkhead and the hull join through shaft packings. The towing bitt extends into the engine room with 4-inch steel pipe to the keel amidships forward of Bulkhead 15. A 2-inch pipe

bracket braces the main deck for additional towing bitt strength

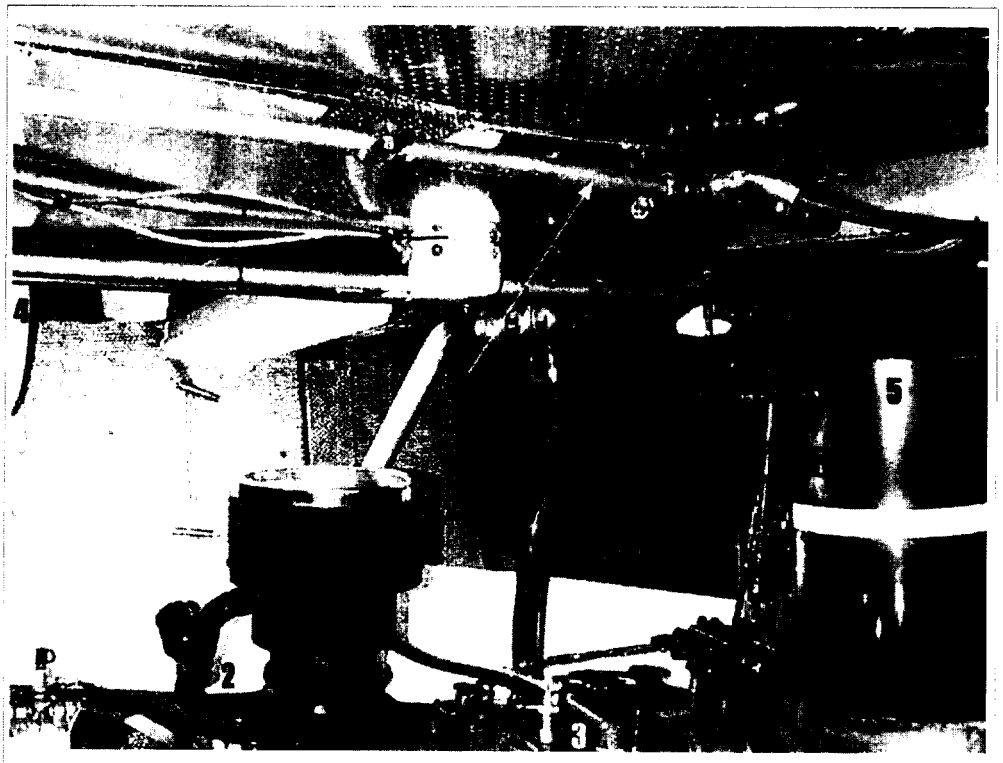


1. Bulkhead 15
2. Hydraulic Tank
3. Mufflers
4. Starboard Engine
5. Port Engine
6. Lube Oil Filters

Figure 2-15
Engine Room (after Bulkhead)

F.10. Halon system

The halon fire system piping runs through Bulkhead 9 (See figure 2-16) on the port side and continues parallel to the bulkhead until it reaches the centerline. It then travels aft along the overhead to a discharge nozzle at Frame 12. Two 190 degree temperature sensors are located above each reduction gear on the overhead. Removable aluminum deck plating is installed between, and forward of the engines. A removable soft patch is located in the overhead. The engine room bulkheads and overhead are covered with fiberglass, and backed by aluminum sheathing to prevent condensation and baffle engine noise.



1. Halon system Piping
2. Engine Shutdown
3. Stbd Engine
4. Air Lift
5. Muffler

Figure 2-16
Halon System

Section G. Coxswains Flat

Overview

Introduction This section discusses the Coxswains flat of the 44' MLB.

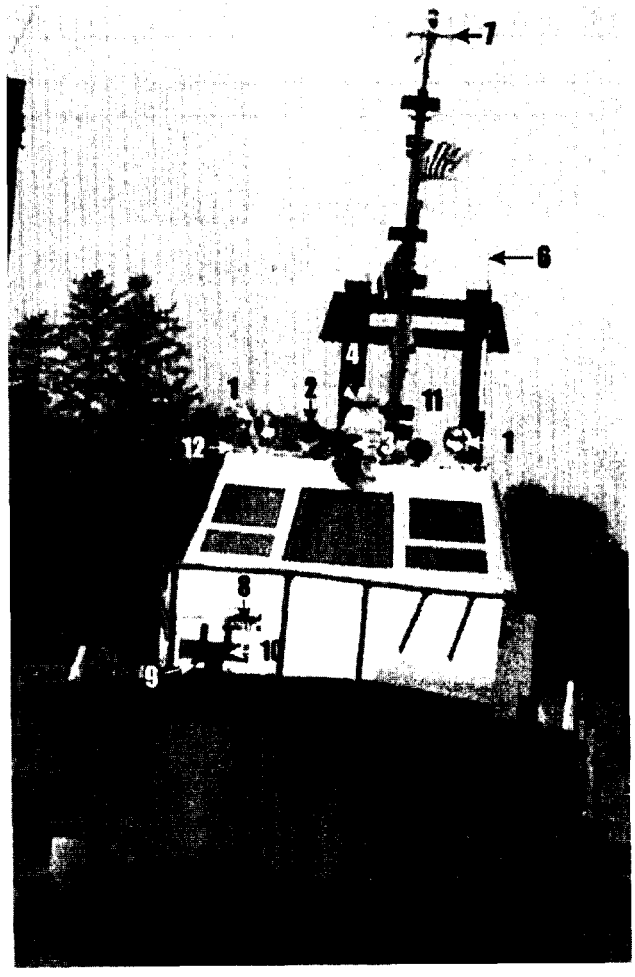
In this section This section contains the following information.

Exterior (Top of Overhead)

G.1. Forward

The radar antenna pedestal is located centerline forward. It supports the radar antenna. A warning placard is located on the side of the radar antenna housing. Two 24V, 450W, searchlights are mounted 12 inches aft of the windshield, one to port and one to starboard of the radar antenna. Each light is fully trainable and individually controlled from the coxswain's flat using watertight switches and control levers.

Directly ahead of radar antenna is mounted a blue light.



1. Port/Stbd Search Light
2. Air Horn
3. Blue Light
4. Radar Antenna
5. Mast
6. FM Antenna
7. FM Homer Antenna
8. 60-lb. Danforth Anchor
9. Bull Nose
10. Forward Mooring Bitt
11. Loudhailer Speaker
12. GPS Antenna

Figure 2-17
Forward Exterior of MLB

G.2. Antennas Outboard and slightly aft of the starboard spotlight is the DGPS antenna position. Outboard of the port spotlight and slightly aft is the VHF-FM antenna position.

G.3. Air horn To starboard of the centerline above the helmsman chair is the air horn. This horn is operated by a pull handle mounted to the interior of the overhead.

G.4. Loudhailer speaker Between the radar pedestal and the port searchlight is the loudhailer speaker.

G.5. Detachable extension One portion of the coxswain's flat overhead is a detachable extension. This extension, which supports the foul weather nylon dodger, is made of aluminum framework and hangers. Clear vinyl windows are sewn into the dodger for visibility aft when the boat is being operated with the curtain down.

WARNING

Securely closing the dodger in heavy weather or surf is not recommended. If the boat capsizes, enough water may be held inside the dodger to prevent the boat from righting. The dodger should be rolled up and/or secured out of the way for most types of special evolutions, such as towing approaches, piloting in restricted waters, and other revolutions requiring an unrestricted view.

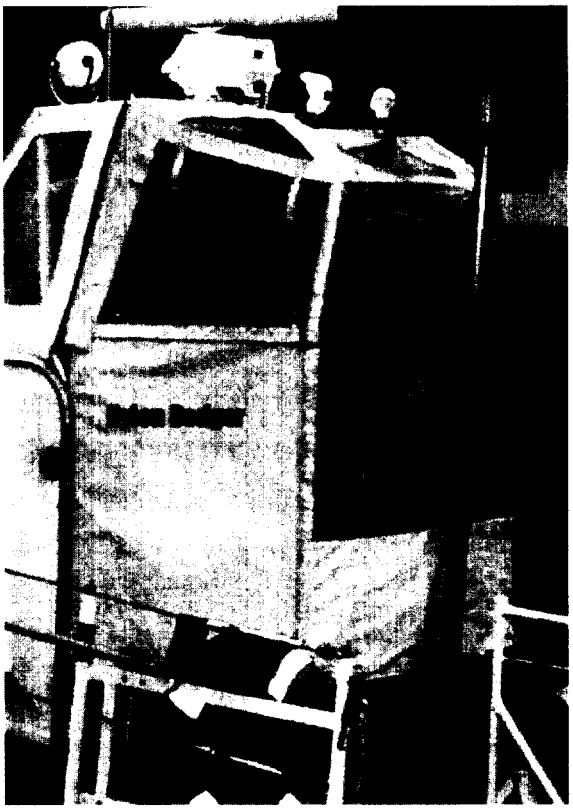
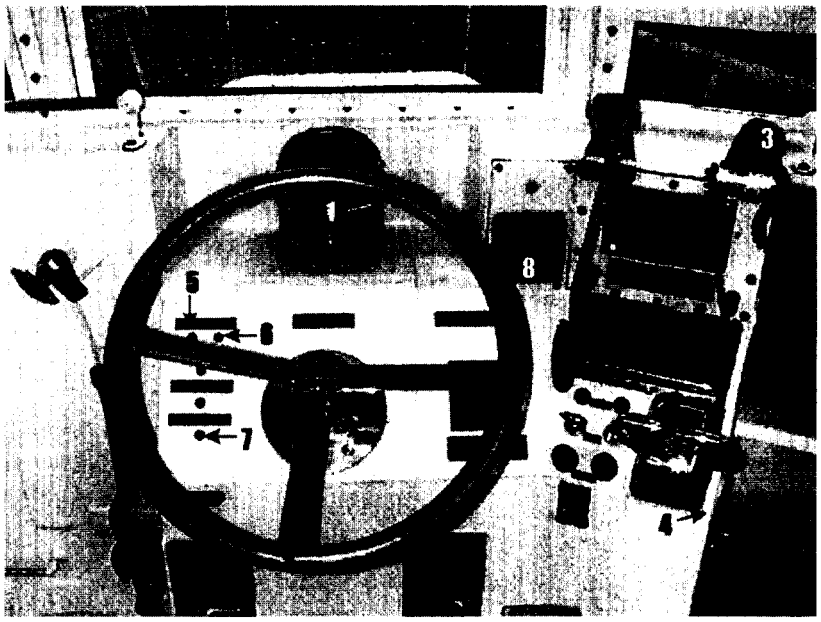


Figure 2-18
Coxswain Flat Dodger

Interior

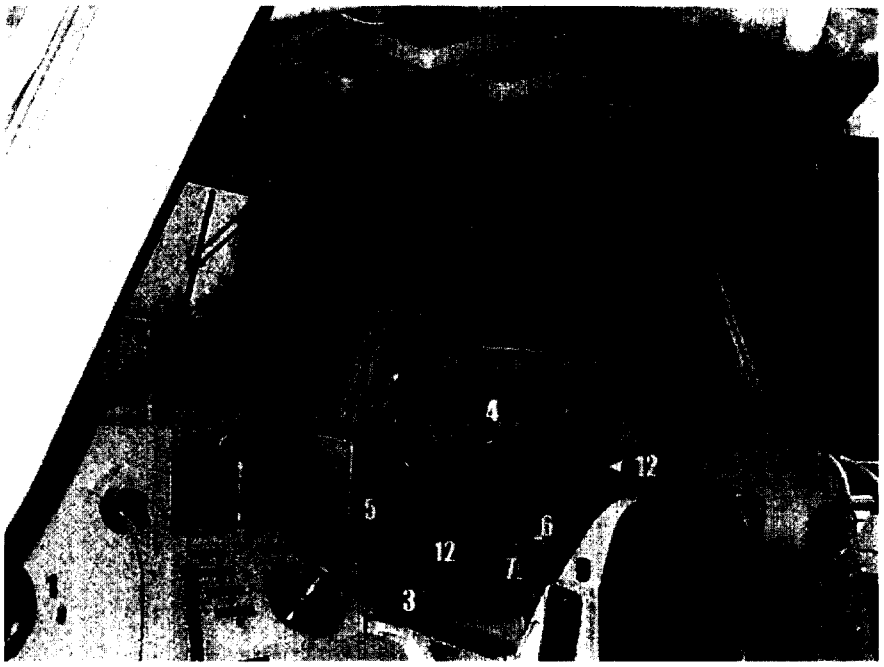
G.6. Windshield

Forward, over the console area (See figure 2-19), is a three section windshield made of ½-inch heat treated glass. The center is a fixed single pane window. The outboard sections are split panes of which the upper sections fold out to assist ventilation, night vision, and communication with crew members working forward. A single windshield wiper is powered by a motor mounted above the center window (See figure 2-20). The air control and wiper operation valves are mounted on the overhead, between the starboard search light and centerline.



1. Compass
2. Wheel/Helm
3. Loudhailer Mic
4. Safety Belt Pad Eye
5./6. Search Light Switches
7. Blue Light Switch
8. Depth Sounder

Figure 2-19
Console Area of Coxswain Flat



1. Quick Acting Water Tight Door
2. Compass
3. Helmsman Wheel
4. Loudhailer Mic
5. Depth Finder
6. Radar
7. Engine Morse Control
8. VHF-FM ADF
9. Coxswain Chair
10. Air Lift
11. Air Horn Lever
12. GPS Receiver

Figure 2-20
Coxswain Flat

G.7. Console instruments

The 5-inch compass (Danforth Constellation or equivalent) is mounted with a spacer on the centerline in a recessed area of the console directly in front of the helmsman's chair.

CAUTION !

DO NOT place metallic or magnetic objects such as radio microphones, knives, screwdrivers, or wrenches, on the console near the compass. Additional metal will adversely affect compass accuracy.

Directly below the compass is a 20-inch diameter cast or welded spoke heavy weather helm mounted on the centerline to the angled face of the console. To starboard of the wheel, sealed under a watertight glass cover, are the engine alarm warning lights for water temperature, alternator and lube oil pressure. The port and starboard engine tachometers are centered in this area. Immediately below the tachometer and alarm package are the main engine start buttons, two neutral throttles to adjust engine RPM while in neutral, and two T-handle engine stops.

G.8. Main engine controls

To starboard of the neutral throttles and engine stops are the two main engine controls (See figure 2-21). These levers combine clutch and throttle action for each engine.

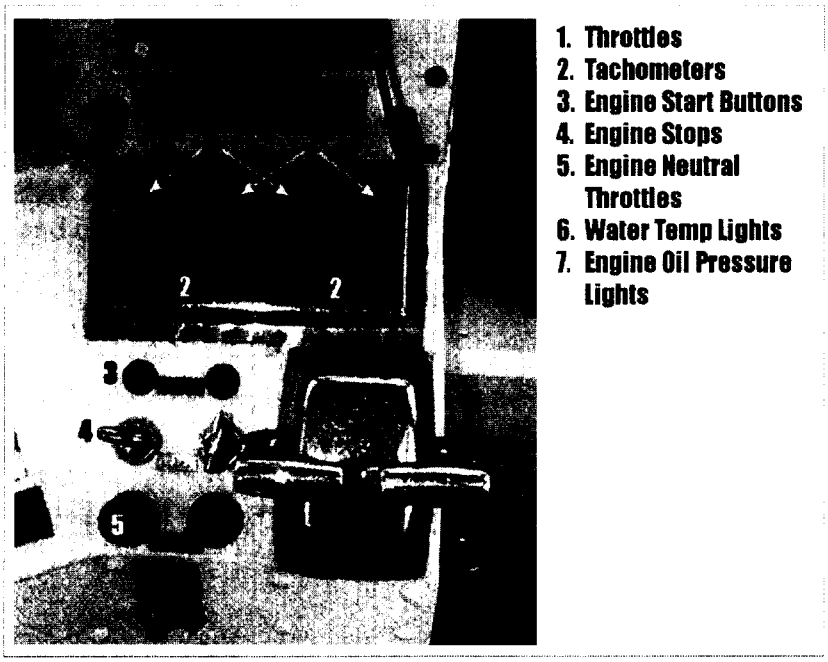


Figure 2-21
Throttles and Engine RPM Gauges

G.9. Navigation aids

The VHF-FM automatic direction finder (ADF) indicator is mounted in the interior of the coxswain flat on the overhead, on centerline. The remote HF Radio speaker is also mounted on the port side overhead. To starboard of the compass (inset into the console) is the fathometer. In the area above the tachometers (also inset into the console) is the VHF-FM radio transceiver and the loudhailer. Outboard of the main console is the radar unit. Immediately above the radar is the DGPS. Below the radar shelf is the shore tie receptacle.

G.10. Main engine air vents

Mounted on both port and starboard sides of the superstructure are the main engine air vents. The vents start at the main deck level and rise to the top of the superstructure. They then return to the deck on the interior of the coxswain flat area, pass through the main deck and enter the engine compartment. Each vent has a screen over its opening. At deck level, forward of the starboard air vent, is a 1-½ inch fire main riser. At deck level forward of the port air vent is the fuel fill and fuel tank vent risers.

G.11. Helmsman's chair

A helmsman's chair is bolted to a pedestal. The pedestal is welded to the removable engine room access deck. Directly aft of the wheel, the chair is equipped with a bar under the front of the seat for fore and aft adjustment, an adjustable back rest, three height settings and swivel adjustment. Attached to the non-sliding base, on either side directly under each seat arm, are stainless steel tabs. The tabs curve from under the base to form attachment points for the coxswain's seat belt. The seat belt is intended as a method of securing the coxswain into the chair for heavy weather and surf operations. A coxswain may elect to use this helmsman's chair belt or decide to use a standard crew safety belt attached to the console. Either method is acceptable, but the equipment **must be aboard and serviceable** for both methods.

WARNING

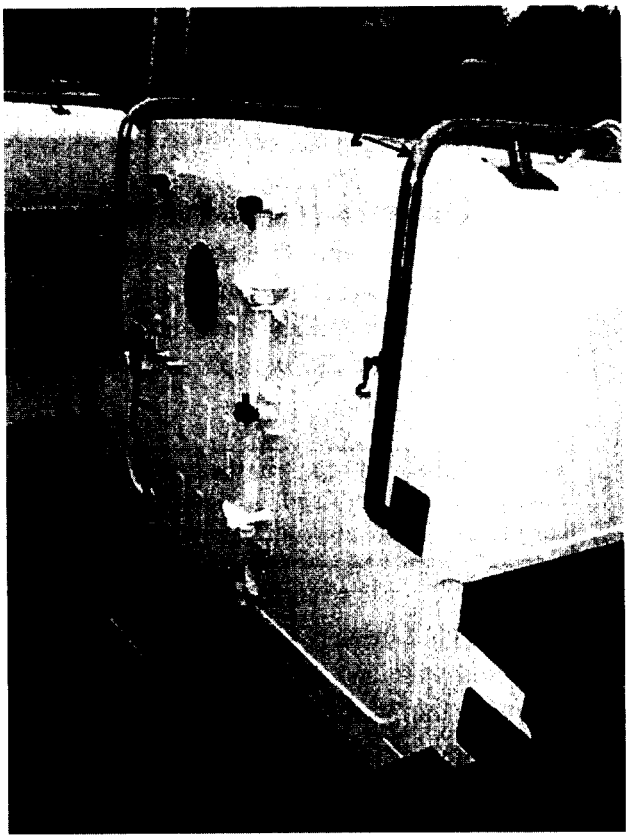
All joints, nuts, and bolts must be regularly inspected for rust and corrosion. Ensure that BOATALT 60, strengthening the fasteners and runners, has been completed. Grease all running parts regularly and watch for cracks in the chair.

G.12. Precautions for heavy weather and surf

To provide better visibility, drainage, and traction, the coxswain flat is covered with an elevated grating. Foot guards are attached to the aft, angled sides of this grating. Stainless steel plates with safety padeyes are positioned waist high at points aft of the air intake vents both inboard and outboard, on the face of the console, below the engine controls and lighting switches, and on the inboard face of the coxswains guard. These padeyes are intended for the attachment of the crew safety belt in heavy weather and surf. There are handholds, port and starboard, above the watertight door and above the radar.

G.13. Port door

To port of the coxswain's console is a quick-acting watertight door with a portlight. This door leads to the mess deck compartment. A hook to hold the door open is attached to the port air vent.



1. Quick-Acting Watertight Door
2. Stainless Steel Tow Rail
3. Well Deck 18" Scuttle

Figure 2-22
Aft Survivors Compartment (Exterior)

Section H. Aft Survivor's Compartment

H.1. General

Between Bulkhead 17 and Bulkhead 21 is the aft survivor's compartment (See figure 2-22). This compartment is constructed of .090 aluminum sheet, with a quick-acting watertight door and a portlight on Bulkhead 17. A hook on the port side of Bulkhead 17 holds the door open. On both sides of the main deck, between Frames 17 and 18, are mooring bitts. A 12-inch catwalk runs along each side of the compartment from Frame 17 to 21.

H.2. Access

The aft survivor's compartment is entered through a quick-acting watertight door, placed off centerline to starboard on Bulkhead 17. There is a ventilation warning placard on the inside of the door.

H.3. Lighting

Two overhead lights are in the compartment, one should have a red lens. Two handrails are on the overhead.

H.4. Deck

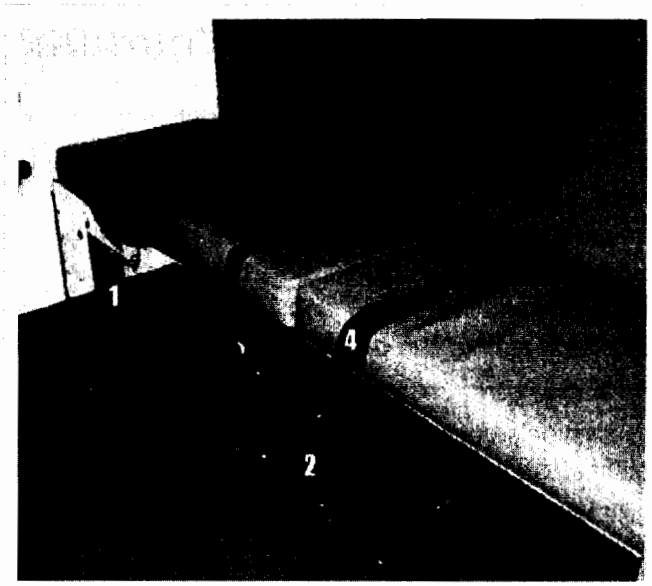
This space has a false aluminum deck with a bilge inspection plate just aft of Bulkhead 17, and to the port side of the compartment's center. Deck matting is fitted over the deck.

H.5. Port bench

A 5-pound dry chemical fire extinguisher is mounted alongside the seat on the port side of Bulkhead 17 (See figure 2-23). The seat cushions are covered and have automotive type seat belts. Above each bench seat are aluminum panels that can be removed for access to covered areas of the compartment and outboard sections of the bilge. Built into the port bench seat are the underway compartment heater and the inport compartment heater. The control switch for the inport heater is found in the upper port side corner of Bulkhead 21 and the underway heater control is on the face of the port bench seat just aft of Bulkhead 17.

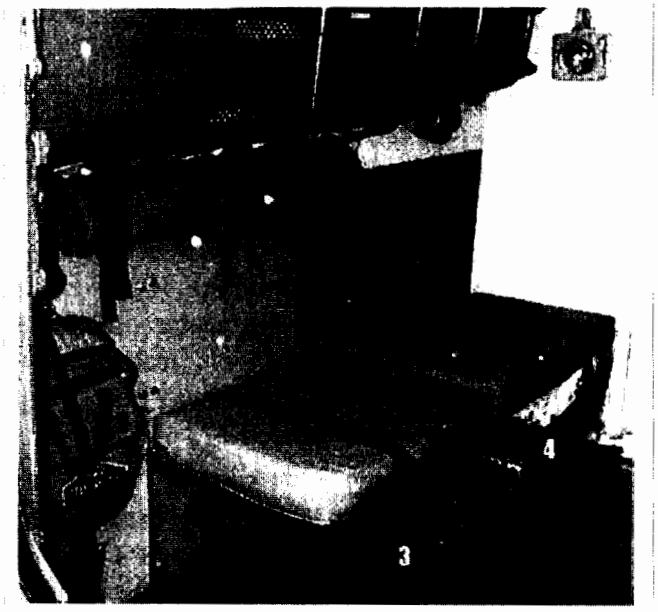
H.6. Starboard bench

Above the starboard bench seat, mounted to the bulkhead on brackets, is the Stokes litter (See figure 2-24). A swimmer's harness is attached to the Stokes litter with small stuff so it is available for immediate use. Secured on the face of the starboard bench seat is a fire axe. The emergency medical technician's kit and oxygen kit is secured to the deck in the space between Bulkhead 17 and the starboard bench seat.



1. Shore Power Compartment Heater
2. H/W Compartment Heater
3. Deck Equipment Stowage
4. Seat Belts

Figure 2-23
Port Bench (After Compartment)



1. Stokes Litter
2. EMT Kit
3. Firefighting/Be Watering Storage
4. Fire Axe

Figure 2-24
Kit And Stokes Litter Stowage

H.7. Bulkhead 21

A battle lantern is mounted on Bulkhead 21 on the centerline above the lazarette hatch. Mounted in brackets above the watertight door is the emergency tiller arm. To starboard of the door, below deck level, is a sluice valve which allows water to be drained from the aft lazarette.

NOTE

The sluice valve location should be labeled with the words "SLUICE VALVE" In 2-inch letters on Bulkhead 21 directly above the valve.

A watertight hatch is located in the center of bulkhead 21. A hook on the face of the port seat holds the door open. A dogging wrench is stowed on the starboard side of this hatch. The hatch allows access to the hydraulic steering components, the rudderposts, and the emergency steering disconnects inside the lazarette. The rudderposts protrude through the lazarette deck and allow emergency rudder control from the aft deck with the emergency tiller arm.

Section I. Weather Deck

I.1. General

Centerline at the bow is the bow chock or bull nose. The mooring bitt is directly aft of the bull nose. The anchor line hawse pipe is a 4-inch diameter pipe rising 2 inches above the deck and is halfway between the forward mooring bitt and the escape batch. This is plugged with a stainless steel and rubber expansion plug. The expansion plug should have a lanyard attached to the boat to prevent losing it over the side.

Mooring bitts are located on the port and starboard sides at Frame 5. A handrail, made of aluminum pipe, begins just aft of the forward mooring bitt and runs aft on the port and starboard sides, terminating between Frames 10 and 11. The UHF-SSB antenna is attached to a deck mounted pivot bracket between Frames 5 and 6 on the port side. The antenna is held upright by a brace bracket welded to the forward hand rail. A warning placard is located near the base of the antenna. On the port and starboard sides of the forward coxswain's flat bulkhead are the running lights. Detachable aluminum steps lead to the forward deck on both the port and starboard sides of the coxswain's flat.

I.2. Danforth anchor

The area on top of the forward survivor's space, from Bulkhead 5 to Frame 8 starboard of centerline, contains one 60-pound Danforth anchor.

I.3. Working area

An open "working area" begins at Frame 11. A coxswain guard screen of vinyl coated chain link fence material hangs from a stainless steel, flat bar and is attached to the inside of the coxswain's guard with small diameter nylon line.

WARNING

This screen will not withstand the force of a parting towline which can generate as much as 450,000 foot pounds of force. (By comparison, a 30.06 rifle generates only 3,000 foot pounds of energy) It is only effective against loose gear flying free through the air. Maintain your catenary, and WATCH THE LINE.

I.4. Lifelines

Enclosing the main deck area are four $^{7}/_{16}$ inch bronze lifelines, which run through pigtails on top of and midway down the stanchion. Lifeline turnbuckles on the fourth stanchions allow the lifelines to be tightened. The stanchions are arranged in sets on the port and starboard side of the main deck. The third stanchions on each side have a ring buoy mount and a bracket for holding the float light. Suspended from the top lifelines, by leather straps, are two 8 foot boat hooks with night grooves. A detachable safety line extends from the fourth stanchions to a padeye on the gunwale at the after most corners of the well deck.

I.5. Mast

The mast is on the centerline just aft of the coxswain's guard screen. It stands 16 feet above the main deck and is attached to a pivot bracket. It is held in the upright position by a brace which locks into an aluminum plate. This brace is welded to the aft portion of the cabin top. The bracket for the ship's bell is bolted to this plate.

I.5.a. Lights

On the top of the mast is a 360 degree white anchor light. Just below on the forward side, is a 225 degree white masthead light. Spaced one meter below the forward masthead light is a 225 degree white towing light. Facing aft, one meter below the anchor light, is a 135 degree yellow towing light. A 135 degree white stern light is one meter below on the aft side with another 135 degree yellow towing light just below it.

I.5.b. Wiring

Wiring from the mast is combined in one cable running from the base of the mast up the port side of the coxswain screen guard, attached to the overhead, and plugged into a 10-pin cannon plug connector. A cable leading from the ADF antenna on the top of the mast follows the same route as the mast cable. A single-wire coaxial cable connects the mast top antenna with the VHF-FM radio transceiver.

I.6. Towing bitt

The towing bitt is on the main deck at Frame 15 on the centerline.

CAUTION !

The working surface of the bitt MUST NOT BE PAINTED, as paint may damage the towline or cause it to jam.

NOTE

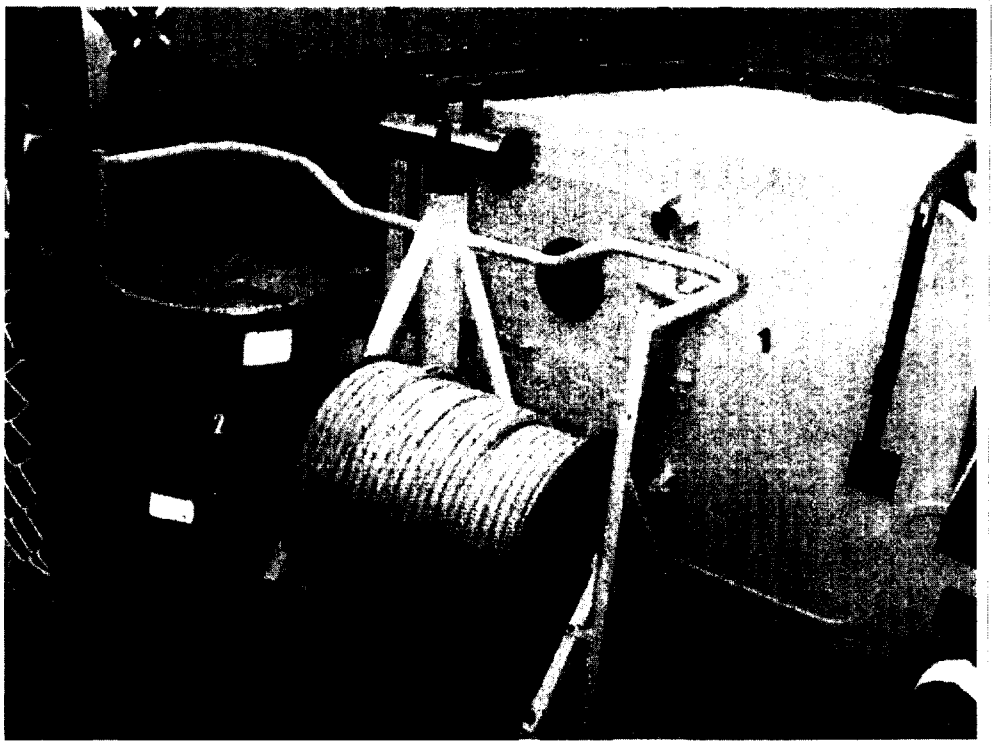
The height of the tow bitt will cause the boat to heel sharply while turning with a tow.

I.7. Tow reel

Just to port of the centerline is a manually operated towline stowage reel which holds 600 feet of 3-inch DBN towline.

CAUTION !

The MLB exerts a bollard pull (static towing force) of 6,500 pounds. The rated strength of the bitt and the line is matched to this capability. NEVER double the line or use a size large than the 3 inch DBN authorized.



1. Bulkhead 17
2. P-5 Drop Pump
3. Towline and Reel
4. Tow Bitt

Figure 2-25
Tow Reel, Bitt and Drop Pump

I.8. Portable dewatering pump

Starboard of the bitt is a portable dewatering pump. The pump is stored in a sealed container and mounted on a bracket which is attached to the deck. The pump, bitt, and tow reel working area are enclosed by a safety railing which extends forward to Frame 14 on the port and starboard sides. This rail has padeyes on each side for attachment of boat crew safety belts.

I.9. Deck

On each side of the aft survivor's compartment, a 1 foot wide deck leads aft to the stern. Detachable aluminum steps lead up to the stern from this deck.

I.10. Tow rail

Bolted to the top of the aft survivor's compartment is a stainless steel tow rail (also known as the taffrail). Running up the forward face of Bulkhead 17 on the port and starboard sides, the rail runs around the top edges of the compartment. This rail serves as a hand rail but more important, it supports the towline off the aft compartment as it tends over the stern.

I.11. Stern flood light

On the centerline under the tow rail is a fixed flood light, which is used to illuminate a stern tow when necessary. This is recessed into the after face of the aft survivors compartment.

I.12. Stern deck fittings

On the stern deck are capped pipe fittings over each rudderpost. These caps can be removed to allow the emergency tiller arm to be placed atop the rudderpost in case a steering casualty occurs. These caps should have lanyards attached to keep them from being lost over the side. Directly outboard of each cap fitting is a small knuckle bitt.

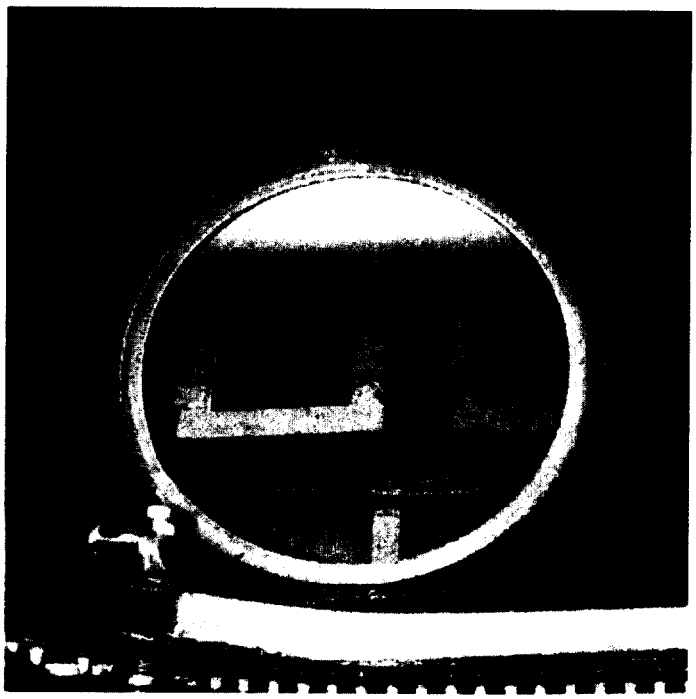
Section J. Well Deck

J.1. Exterior

A well deck, with a single detachable aluminum step in each corner, extends from Bulkhead 15 to 17. To allow drainage from this area, scuppers are located in each of corner of the deck. In each scupper is a 4 inch plastic ball which prevents water from entering the well deck from the outside. Inboard, on the port side, next to Bulkhead 15, is the sea chest vent pipe.

J.2. Interior

Access to the well deck void is through an 18 inch watertight scuttle. Mounted in brackets on the starboard side of the void, are two high pressure hoses carrying hydraulic fluid for the rudders. On the port side are two water lines leading to the aft survivor's compartment heater. A transverse exhaust tube, lead ballast, and wiring for the aft survivor's compartment lights and heater are also located in this space. Lead weights, weighing 1400 pounds total, are mounted to the frames for extra ballast. These weights have been adjusted to provide optimum trim for the boat.



1. Well Deck Scuttle
2. Ballast Weights

Figure 2-26
Well Deck Void


UNITED STATES COAST GUARD
1790

Chapter 3
Boat Systems and Components

Overview

Introduction

This chapter provides information pertaining to the mechanical, electronic, and manual operating systems of the motor lifeboat. It will familiarize the crew with basic operating characteristics of the. boat. This chapter also provides information which will prevent common casualties and allow the boat's crew to operate more efficiently.

In this chapter

This chapter contains five sections.

Section A. Propulsion System

Overview

Introduction This section discusses the components of the propulsion system.

In this section This section contains the following information.

Engines

A.1. General

The Detroit Diesel model 6V-53 marine engine is a 6-cylinder, 2-cycle, 318 cubic inch displacement engine. Each engine generates 165hp at a cruising speed of 2380 RPM's and 185hp at the maximum of 2800 RPM. Shaft RPM at maximum speed is 933. The engine comes in separate port and starboard versions with each engine shaft turning in an outboard direction in forward gear.

A.2. Power take-off (PTO)

The port engine (model 5062-7000) operates a power take-off (PTO). The PTO runs a 120 gpm fire pump, mounted inboard and below the engine, and an air compressor, mounted on the aft face of the flywheel housing. This engine also supplies water to the underway heating system. The shaft of this engine turns counterclockwise in forward gear. This engine and its accessories weighs approximately 2,000 pounds.

A.3. Hydraulic pump

The starboard engine (model 5032-3000) operates a hydraulic pump. The pump maintains pressure in the steering system and is mounted on the aft face of the flywheel housing. The shaft of this engine turns clockwise in forward gear. The approximate weight of this engine and accessories is 1,800 pounds.

CAUTION !

Use care when adding lube oil to these engines. The interval between the "Low" and "High" marks on the engine oil dipstick represents one half gallon of oil. Allow adequate time for oil to drain back to the oil sump to prevent overfilling.

A.4. Mechanical governor

Each engine has a variable speed mechanical governor mounted aft between the engine blower and the flywheel housing. The governor controls the engine idle speed, limits the maximum "no-load" speed, and holds the engine at any constant speed set by the operator. It incorporates one lever to set and adjust engine speed, and another stop lever that overrides the governor and stops the engine.

NOTE

The engine has three separate STOP systems; the main control T-handle on the coxswain console which is connected to the stop lever atop the governor, an emergency air shut-down located between the blower and the AirSep filter, and emergency fuel oil cut-offs located on the forward side of Bulkhead 9. The air shut-down and fuel oil cut-off are ONLY to be used in an emergency (such as a fire or uncontrollable speed engine).

Fuel Oil System

A.5. General

The boat's fuel (Number 2 diesel) is carried in a 333 gallon tank located in the mess deck void. The tank's 2 inch sounding tube is located just forward of Bulkhead 9 on the starboard side in the mess deck compartment. A sounding rod is stowed inboard on the ladder to the mess deck. A vent pipe passes through the mess deck, ahead of Bulkhead 9 port side, and up through the weather deck to a goose neck air vent. A course protective screen covers the opening of the vent and a 40 mesh screen can be found inside the vent. Both screens serve to prevent foreign material from entering the fuel system. A check ball is located inside to prevent water from entering the vent. A 1-½ inch fill pipe is located 8 inches forward of Bulkhead 9, outboard of the spray shield on the port side. The following table is a conversion table. It lists the gallons of fuel that correspond to soundings in inches (providing a sounding rod calibrated in inches is used).

NOTE

When filling, several soundings should be taken to ensure that you do not exceed 95% of its capacity. If the fuel tank is over-filled while the sounding tube cap is removed it is possible to flood the mess deck with diesel fuel.

NOTE

To allow for expansion of fuel and to minimize condensation, the tank is normally filled to 95% of its capacity (313 gallons).

44' MLB Fuel Tank Sounding Table			
Sounding (inches)	**Gallons**	**Sounding: (inches)**	**Gallons**
0	18.8 (max)	15	187.9
1	27.1	16	198.6
2	36.8	17	209.8
3	48.2	18	220.7
4	60.3	19	231.4
5	72.4	20	241.9
6	84.5	21	252.4
7	96.4	22	262.8
8	108.1	23	273.2
9	119.8	24	283.4
10	131.5	25	293.5
11	142.9	26	303.5
12	154.4	27	313.3
13	165.6	28	323.2
14	176.8	28.5 (FULL)	333.7

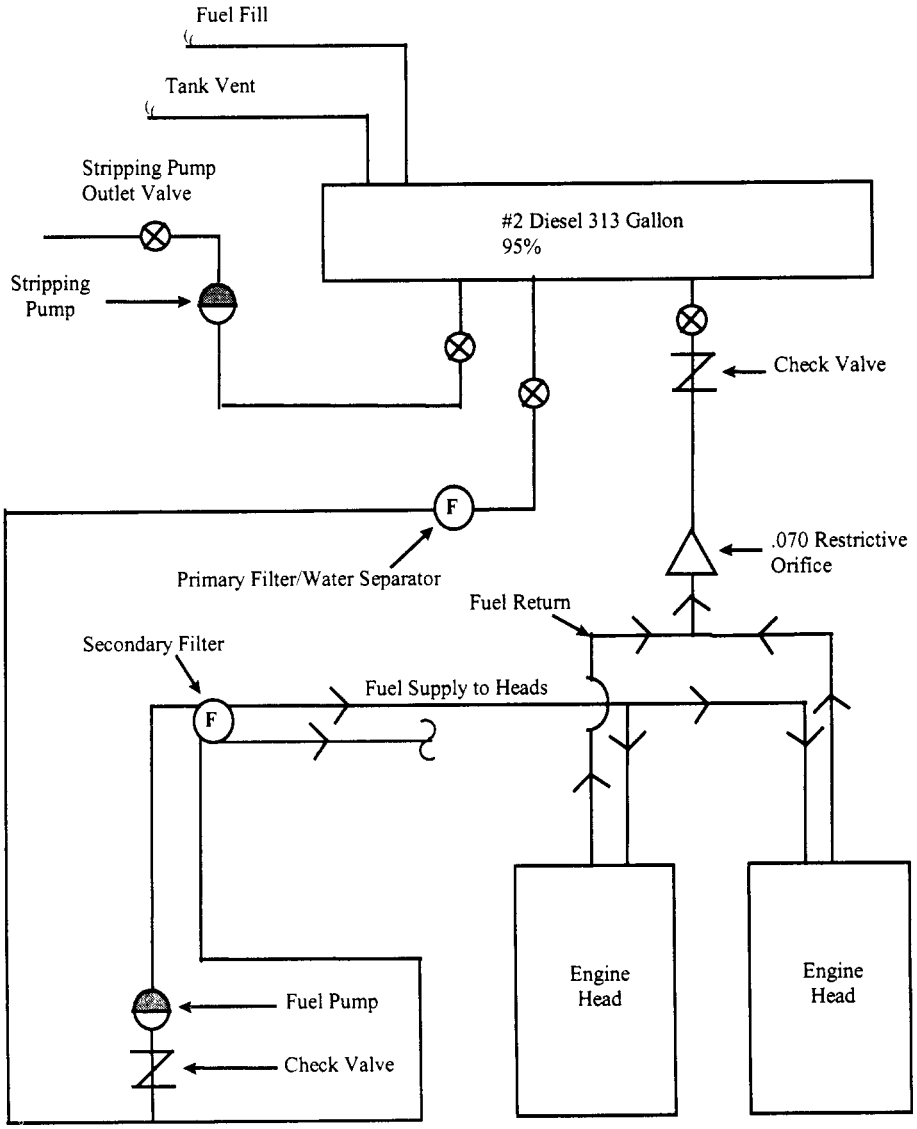


Figure 3-1
Fuel Oil Systems

A.6. Fuel path

The positive displacement, gear type fuel pump draws fuel from the tank through a Racor filter. It is then forced under pressure through a secondary filter. After the secondary fuel filter, fuel is forced through the fuel inlet passages in the cylinder head and fuel lines to the injectors. Excess fuel is circulated through the injectors, serving as a coolant/lubricant then back to the fuel tank where it is cooled. Emergency fuel stops, located on Bulkhead 9, are primarily used to stop the flow of fuel to the engine room in the event of a fire. The engine will exhaust the fuel in the system before stopping.

NOTE

Fuel pumps mounted on the flywheel housing, are furnished in port and starboard versions and are not interchangeable. Operating fuel pressure at 1800 engine RPMs should be between 50-70 PSI.

A.7. Stripping pump

A stripping pump is located on the port side of Bulkhead 9 for stripping fuel from the bottom of the tank.

Engine Cooling System

A.8. General

To maintain efficient operating temperatures in the main engines and the reduction gears, the boat uses a dual raw/fresh water system. The raw water cools the closed circuit fresh water system, which cools the engine both directly and indirectly, by cooling the lubricating oil and the reduction gear fluid.

A.9. Sea Chest

A sea chest located port of the centerline between Frames 13 and 14 serves both engines. Two 2-inch duplex strainers, one for each engine, are located aft of the port and starboard engines.

CAUTION !

When cleaning a sea strainer, only one basket should be cleaned at a time. If the engine is operated without water running through the pump, damage will occur to the pump impeller.

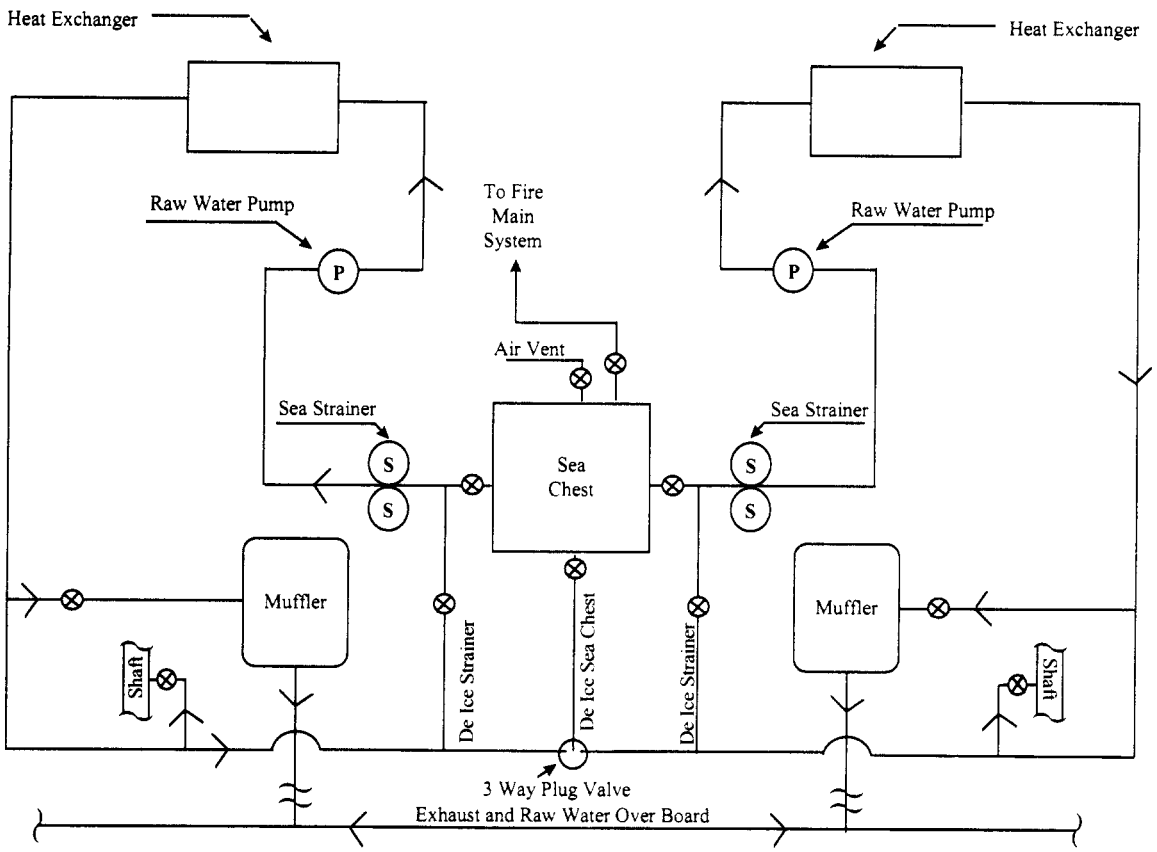


Figure 3-2
Raw Water Cooling System

A.10. Raw water cooling system

The raw water pump, mounted on the back of each engine, draws water from the sea chest through the 2 inch gate valves and duplex strainers. The pump then forces raw water through the heat exchanger where it cools the enclosed fresh water. The raw water then discharges through the muffler where it cools the exhaust and muffles engine noise before passing overboard through the transverse exhaust pipe. Part of the water is drawn off to stern tube connections, where it lubricates shaft bearings. A branch line from the sea water discharge supplies engine heated water to the sea chest and sea strainers for deicing.

A.11. Fresh water cooling systerm

Direct cooling of the engines is done by a closed-circuit fresh water system. Coolant is drawn by a belt driven fresh water pump from the heat exchanger tank to the engine/reduction gear oil cooler, then it is circulated through the cylinder block, around the cylinder heads and the exhaust manifold, to the thermostat housing. The thermostat regulates coolant flow to maintain an operating temperature of 160-185°F. The coolant capacity of the starboard engine is 7-½ gallons. The coolant capacity of the port engine, including the heating system, is 9-½ gallons.

NOTE

To protect the heat exchanger element from electrolysis (corrosion), there is a replaceable zinc electrode in the heat exchanger inlet and another in the outlet.

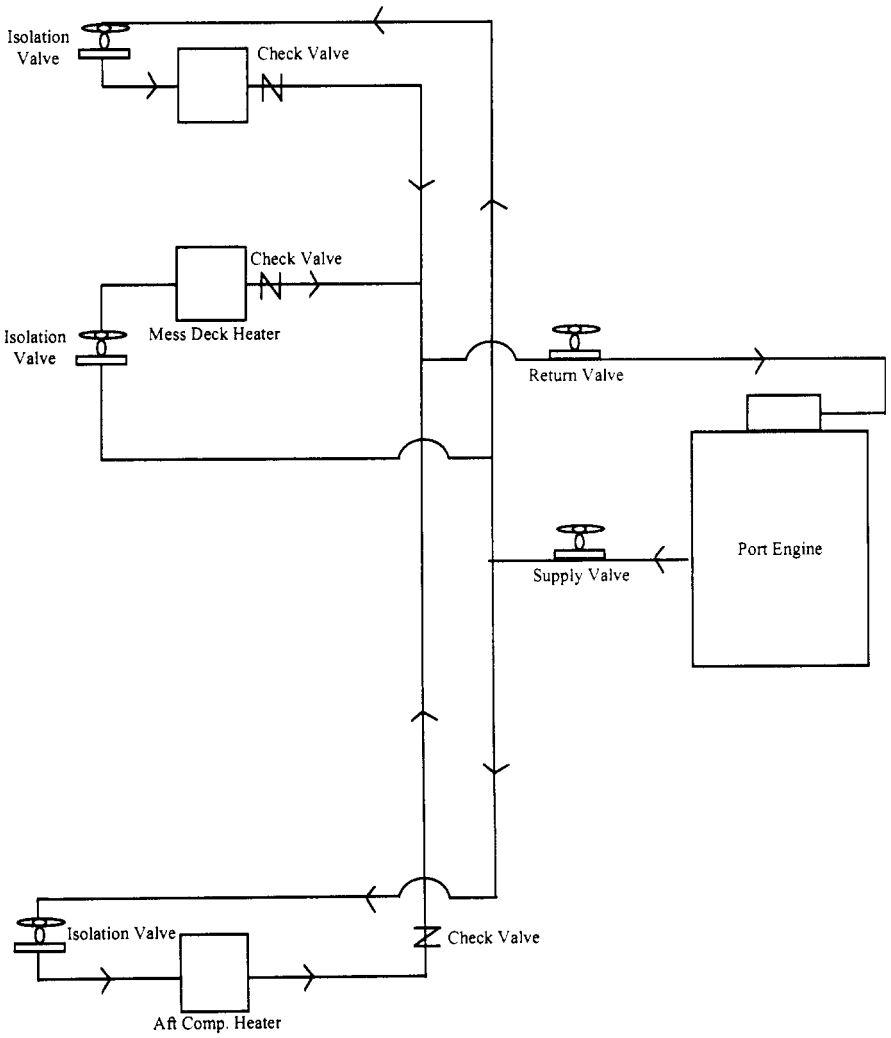


Figure 3-3Fresh Water Cooling System

Engine Exhaust System

A.12. General

Exhaust gases leave the engine through twin manifolds to a vertical water injection dual muffler tube where they are cooled by a raw water discharge. Gases then pass into 6 inch stainless steel exhaust tubes, which connect to a transverse 8 inch exhaust pipe aft of Bulkhead 15. Gases exhaust from the vessels side. Muffler connections are arranged so exhaust lines are open regardless of the boats attitude in the water.

Engine Alarm System

A.13. General

The engines are equipped with an alarm system to alert the crew whenever there is a deviation from the engine's normal operating standards. The system is operated by the 24V DC electrical system and consists of:

- a water temperature switch,
- a lube oil pressure switch,
- indicating lights,
- an alarm bell, and
- a cut-out switch for silencing the bell.

A.14. Alarm system operation

During normal operating conditions, the water temperature switch and the lube oil pressure switchs are open. Any abnormal rise in the water temperature of either engine will close the water temperature switch. A drop in lube oil pressure will close the lube oil pressure switch. In either case, the alarm bell, located in the steering console, will sound and the appropriate indicating light will illuminate. The bell will continue ringing until the abnormal condition is corrected. The cut-out switches are provided to silence the bell for corrective action ONLY. The switch shuts off the bell for all engine alarms.

A.15. Mechanical guages

In addition to the electrical engine alarm system, mechanical gauges are provided to indicate the water temperature and lube oil pressures for each engine. These gauges are not affected by the alarm system.

Marine Gear

A.16. General

Power is transmitted to the propellers by way of Warner Series 73C hydraulic reverse gear, controlled with the throttle levers. The gear ratio is 3 to 1 in forward, and 2.64 to 1 in reverse. The unit consists of a forward and reverse gear box mounted in a separate housing on the rear face of the transmission. The transmission incorporates a planetary gearset, forward clutch, reverse clutch, oil pump, pressure regulator, and rotary control valve; all are contained in a cast iron housing. Operation of the gear is completely hydraulic. The crescent-type gear pump draws oil from the pump to a pressure regulator valve, which regulates the oil for clutch operations. Oil type is Dexron II Automatic Transmission Fluid, the capacity is 3 quarts.

Propellers

A.17. General The 44' MLB is fitted with two 30-inch diameter, 25-inch pitch, 3 blade propellers. The starboard propeller is right-handed, the port is left-handed; thus both props turn outboard at forward throttle, inboard at reverse throttle.

NOTE

When varying engine speeds the stern will "walk" in the direction of the faster propeller in forward and away from that direction in reverse.

NOTE

The design, gearing, and propellers of all boats are intended to drive the boat forward. As a result, the boat will act more quickly and positively in forward motion than in reverse. This is particularly true of the MLB since this boat's drive ratio is low in reverse, it is necessary, when steering with the engines, to use significantly higher RPM on the reverse engine to balance the action of the forward propeller.

Section B. Engine Accessories

B.1. Steering Pump

Steering a 44' MLB in heavy seas by purely mechanical means would require a great deal of physical effort. An engine-driven hydraulic steering pump used aboard this boat greatly reduces this effort. The pump is located on the aft outboard portion of the starboard engine. It provides hydraulic pressure up to 500 psi. The oil capacity of the reservoir is 10 gallons. Oil type is 2075 turbine hydraulic oil. Hydraulic lines extend to the steering wheel and the rudder hydraulic cylinder.

NOTE

Should failure of the steering pump occur, an orbital steering cylinder in the coxswain console reverts automatically to manual steering. Steering action will become noticeably stiff.

B.2. Air compressor

The windshield wipers and horn on the MLB are powered by compressed air supplied by a Bendix-Westinghouse model Flo 500 compressor. The compressor, mounted on the port engine, runs continuously off that engine's power to maintain pressure in a 1.5 cubic-foot capacity air tank, located aft and outboard of the engine. Air is supplied to the horn and wiper motor through a $^3/_8$ inch line running forward on the centerline. Pressure within the system is controlled at 80-100 psi by a governor located in the input line just forward of the air tank. Although the compressor runs constantly, when pressure reaches 100 psi the governor will not allow air to be compressed until the pressure falls below 80 psi. A relief valve on the air tank, set at 110 psi, also helps to prevent overloading of the system.

CAUTION !

Clean air intake to the compressor is important to prevent damage to the compressor. Check the air strainer regularly, and clean it as necessary.

Section C. Firefighting Equipment

C.1. Fire pump

CAUTION !

DO NOT EXCEED an engine speed of 1,500 RPM. With the fire pump engaged, engine speed should be maintained at 1,325 RPM.

The fire pump provided on the MLB is a single-stage centrifugal fire pump, rated at 120 gpm. It can produce a 240 foot head at 3,500 pump RPM (1,325 engine RPM), maintaining 100-110 psi. The pump is located inboard, below the port engine, and is driven by that engine using a belt-drive power takeoff. Raw water is drawn from the sea chest through a simplex strainer. The pump provides sea water to an installed eductor in the engine room and to the main deck via a 1-½ inch fire main riser on the starboard side forward of the air vent.

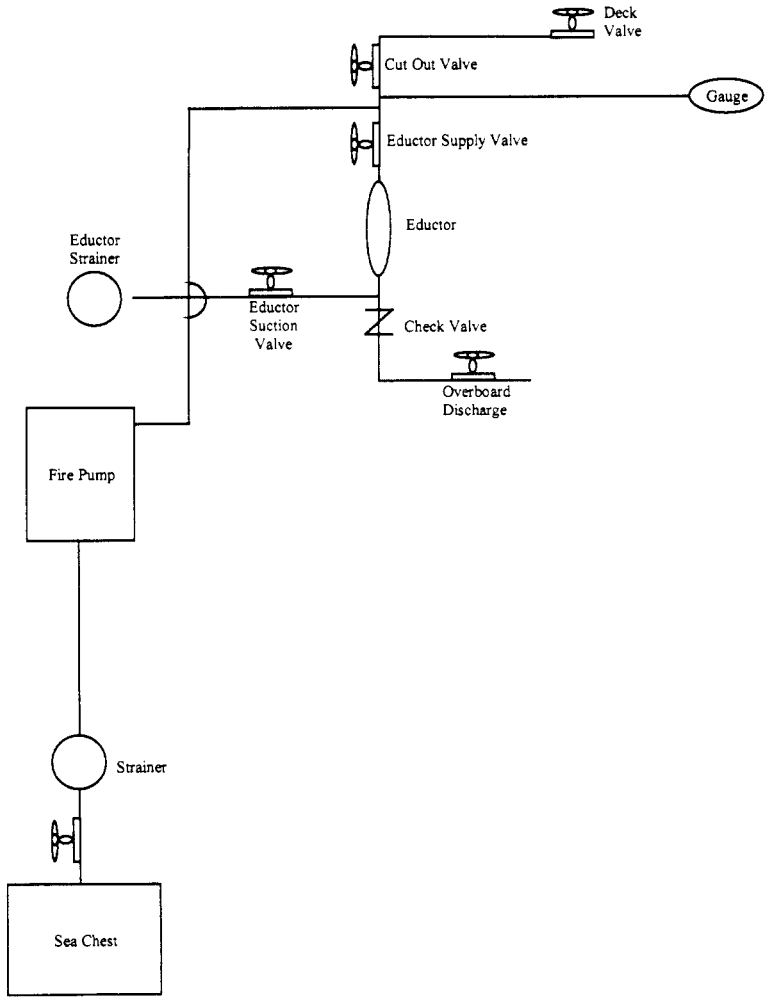


Figure 3-4
Fire Fighting and Eductor System

C.2. Eductor

The MLB carries one portable, and one installed eductor. The installed eductor is fitted to the fire main system, forward against the starboard hull in the engine room. It is used for dewatering the engine room bilge. The other eductor is stored aft in the litter space and is used to dewater vessels.

Externally, the portable eductor has 1-1/2 inch intake and a 2-1/2 inch outlet. Its interior is more complex. A small volume of water is pumped into a Venturi Chamber. This chamber, by restricting water flow, creates a vacuum which draws water through its lower pressure opening. When a higher volume of water is forced through the intake, a greater vacuum is created. This results in increased suction and fluid removal from an area being pumped. When the eductor is powered by the main engine fire pump running full pressure to the firefighting hose, it is an excellent dewatering tool.

C.3. Dewatering pump kit

The dewatering pump kit consists of a portable, gasoline engine-driven dewatering pump, stowed in a removable, water tight container. It is used when an eductor-equipped boat cannot come alongside and remain with a stricken boat, or where an eductor cannot reach the flooded area. For ease of transfer, the can may be dropped into the water and floated to the distressed vessel.

NOTE

Always be sure tending lines have been securely attached when passing the pump.

For specifications, and pump operating and packing instructions, refer to COMDTINST M10470.10 (series), CG Rescue and Survival Systems Manual.

WARNING

Exhaust fumes from this pump are harmful. Ensure area is sufficiently ventilated when operating engine. Do not attempt to start or operate this pump in its container.

C.4. Fire extinguishing agents

In addition to the main engine fire pump and its auxiliary equipment, the MLB carries two types of portable fire extinguishers and a fixed Halon fire extinguishing system.

C.4.a. Dry chemical fire extinguisher

These extinguishers are charged with potassium bicarbonate (PKP). They are effective, to varying degrees, on all types of fires, but are most effective on burning liquids (Class B). The MLB carries three 5 pound dry chemical fire extinguishers; one each in the passenger compartment, mess deck, and the aft survivor's compartment.

WARNING

The dry chemical extinguisher cannot cool a fire nor remove its oxygen. It is effective ONLY in knocking down flames. If enough heat, or an ignition source is present, the fire will reflash after the powder settles from the air. Class A fires are particularly prone to reflash, and thus dry chemical extinguishers are least effective on this type of fire.

C.4.b. Carbon dioxide (CO_2) fire extinguisher

This extinguisher is most effective in fighting electrical (Class C) fires. CO_2 is non-corrosive and does not conduct electricity. It will not damage electronics, wiring, nor clog engine parts, as will PKP. The MLB carries one 5-pound CO_2 extinguisher mounted in brackets under the ladder in the mess deck.

WARNING

CO_2 presents the same reflash hazard associated with dry chemical extinguishers. Be sure all hot spots are cooled to prevent re-ignition. Note also, CO2 is not very effective in extinguishing Class B fires. Vapor fires can burn within a cloud of CO_2.

C.4.c. Fixed Halon fire extinguishing system

The Halon fire extinguishing system provides a fixed means of combating an otherwise uncontrollable engine room fire. The engine room is equipped with two thermal sensors. If a fire breaks out in the engine room, once the temperature rises above 190°F, contacts in the sensors will close and sound the alarm horn. The sensors are wired to operate independently. A thorough understanding of this system is vital.

NOTE

Crew members must have a thorough understanding of the Halon fire extinguishing system.

The bottle containing Halon is installed just port of the engine room hatch, in brackets on the fuel fill and vent pipes.

CAUTION !

The engines must be secured prior to activating the Halon fire extinguishing system.

CAUTION !

The temperature sensors DO NOT automatically activate the Halon fire extinguishing system. Once the alarm and investigation indicates uncontrollable fire is present, the system must be activated manually.

Section D. Electrical System

D.1. Electrical Power

Each engine is equipped with a 70-amp Motorola alternator with a rectified output of 28.5V DC. Each alternator's drive radio delivers full output at engine idle speed. They are designed for parallel operation, charging a bank of two 12V, 200 Amp/hour, batteries connected in series and used for power, lighting, and electronics.

WARNING

Always use extreme care when handling batteries. Battery gases are highly explosive. NEVER smoke around a battery and NEVER disconnect a battery until the space has been thoroughly ventilated. The sulfuric acid solution is corrosive and will burn.

D.2. Electrical Panels

There are 2 electrical panels: the D/C circuit breaker panel and the A/C circuit breaker panel.

D.2.a. D/C breaker panel

A D/C breaker panel located above the sink on the starboard side of the mess deck controls power to the following items:

- navigation lights,
- blue light,
- search lights,
- instrument lights,
- general lighting,
- hot cups,
- engine starting and alarm system,
- space heaters,
- electronics,
- stern floodlight, and
- engine room vent blower.

D.2.b. A/C breaker panel

An A/C breaker panel for the shore tie connection is located in the engine room (starboard side forward above the batteries) and powers the:

- battery charger,
- engine heaters (hot starts),
- electric space heaters,
- A/C receptacle, and
- inport engine room lighting

Section E. Electronics

E.1. General

The MLB is outfitted with advanced electronic gear to aid the crew in navigation and search and rescue. Each component, when properly operated, will add to the safety and efficiency of the boat. New operational capabilities and equipment are constantly being evaluated. See Appendix E to this manual for the specific and type of equipment currently in use.

Chapter 4
The Crew

Overview

Introduction

Each crew member on a Coast Guard boat must know not only their own duties, but those of the other crew members. They must also know the characteristics of the boat, its equipment, and which procedures to follow in the event of an onboard casualty. Commit the characteristics of your boat, its equipment, and casualty procedures to memory. When you have done this, imagine yourself in as many operationally difficult circumstances as you can and think how you and the rest of the crew would work them out. Then, when the opportunity is available underway, practice.

The minimum crew for the MLB is three. This crew consists of a coxswain, engineer, and crew member. The nature of response, local requirements, missions assigned, and special operations could all increase the need for extra crew members. For example, an experienced safety observer, preferably a coxswain, is necessary during helicopter operations and fire response. Whenever possible, a crew of four or more should be assigned to these, and other missions involving emergency situations. All crew members are qualified and certified for their positions in accordance with COMDTINST M161149.9 (series), Boat Crew Training Manual. Their general duties are outlined below.

In this chapter

This chapter contains five sections.

Section A. Coxswain

A.1. Responsibilities

The Coast Guard places great trust in each coxswain and his or her ability to accomplish assigned missions in a safe and professional manner even under adverse conditions. The position of coxswain is one of the most respected and responsible positions in the Coast Guard.

The coxswain is responsible for the boat and its crew during every mission. The coxswain assigns and directs all on board functions during each operation.

A.2. Experience operating in heavy weather

Operating in surf, heavy weather, or breaking bar/inlet conditions without an experienced coxswain can seriously jeopardize the safety of the boat, its crew and the mission. The coxswain must consider many factors when operating in heavy weather or surf. These factors include case severity, experience of the crew, period and type of breaking waves, water and air temperature, and forecast weather outlook. Estimates of wave/surf height are very subjective making local area knowledge and experience critical to success. The above describes the principal roles and knowledge required of the Surfman, which is an advanced coxswain certification.

A.3. Regulations

The extent of a coxswain's authority and responsibilities are specified in COMDTINST M5000.3, Coast Guard Regulations, as follows:

> *"The coxswain shall be responsible, in order of precedence, for the safety and conduct of passengers and crew; the safe operation and navigation of the boat assigned; and the completion of the sortie or mission(s) assigned or undertaken pursuant to Coast Guard policy and regulations. A coxswain underway will at all times respond, within the limits of capabilities and legal authority, to observed hazards to life or property, and violations of law or regulations."*

A.4. Authority

The coxswain is the direct representative of the Commanding Officer or Officer-in-Charge and, as such, (subject to Articles 88-91 of the UCMJ) has authority and responsibility which are independent of rank or seniority in relation to other personnel embarked. The coxswain's authority and responsibility exist only when the boat is engaged on a specific sortie or mission(s). The only persons embarked in a boat who may relieve the coxswain of the responsibilities described above are:

- The coxswain's Commanding Officer, Officer-in-Charge, Executive Officer or Executive Petty Officer.
- A senior officer at the scene of a distress, emergency, or other abnormal situation who exercises authority under the provisions of Coast Guard Regulations, whether or not other units are involved.

Section B. Engineer/Crew Member

B.1. Certification

The position of boat engineer is one of great responsibility. The knowledge and skill of the engineer can make the difference in completing the mission under adverse conditions. The boat engineer must be certified as a crew member before obtaining certification as a boat engineer. This individual performs duty in both the crew member and engineer capacities.

B.2. Responsibilites

The primary responsibilities of this position include operational and underway maintenance of the propulsion system and auxiliary systems.

The engineer may also serve as:

- senior crew member,
- safety observer,
- boarding officer,
- helmsman
- line handler,
- surface swimmer,
- emergency medical technician,
- other such duties as may be assigned by the coxswain in support of operational and training sorties or missions.

Section C. Crew Member

C.1. General

Under the direct supervision of the coxswain, the crew member is responsible for line handling, acting as lookout or helmsman, maintaining a towing watch and assisting the coxswain as required during all evolutions or maneuvers.

Section D. Passengers and Survivors

D.1. General

Qualification, certification and assignment as a crew member on a 44' MLB requires considerable time, effort, and practice. The individual must learn the characteristics of the boat and its missions, as well as the adverse conditions of the sea and the environment in which the boat operates. Each break-in crew member must take the time to study his or her duties in addition to the duties of the other crew members since it may be necessary to perform any given duty in the event of an emergency. The Boat Crew Qualification Guide, Volumes I-IV, COMDTINST M16114.10 provides the standards for qualification as coxswain, boat engineer, crew member and surfman aboard the 44' MLB.

Since passengers and survivors may not have any vessel or equipment knowledge, it is important they receive a basic safety brief prior to getting underway or soon after coming aboard. They should be provided with adequate safety or personal protective equipment based on the mission or situation. At a minimum, each shall wear appropriate personal flotation devices (PFD). When riding along or rescued from adverse conditions, each person should be safely protected through use of boat crew safety belts or installed seatbelts on the MLB seats.

Section E. Training

E.1. General

Assignment as a crew member of a MLB requires considerable practice. Individual characteristics of the boat must be learned. Each crew member should take the time to study not only the boat, but the duties of the other crew members since it may be necessary to perform them in an emergency. Where local staffing permits, additional crew members should ride in a training capacity, to gain familiarity with the boat and cross-train in assigned duties. To become and remain proficient as a crew member on this, or any boat, you must get underway and practice your skills.

E.2. Standards for qualification

The Boat Crew Qualification Guide, Volumes I-IV, COMDTINST M16114.10 provides the standards for qualification as coxswain, boat engineer, crewman and surfman aboard the 47' MLB.

E.3. Training underway

Where staffing permits, additional personnel may ride the boat in a training capacity to enhance their familiarity with the boat. To become and remain proficient as a crewmember on this or any boat an individual must get underway and practice his or her skills repeatedly.

Section F. Safety Equipment

F.1. Personal protective equipment

During all 44' MLB operations, crewmembers shall wear personal protective equipment as required by COMDTINST M10470.10C, Coast Guard Rescue and Survival Systems Manual.

NOTE

The coxswain is responsible for ensuring that all required personal safety equipment is worn, and worn correctly.

F.2. Protective equipment during heavy weather

The following equipment shall be worn during all heavy weather operations unless waived by the Commanding Officer/ Officer in Charge or by the coxswain if he/she has been specifically delegated waiver authority by the Commanding Officer/Officer in Charge :

- appropriate underclothing;
- waterproof footwear and gloves; and
- goggles. Goggles may be necessary for visibility, particularly for persons wearing glasses. Goggles will also protect against glass shards should a window break.

F.3. Protective equipment in surf

When operating in surf conditions, crewmembers shall wear the following equipment as specified in COMDTINST M10470.10C, Rescue and Survival Systems Manual unless specifically waived by the Commanding Officer/Officer in Charge:

- Hypothermia protective clothing
- Safety Helmet. Helmet straps must be secured and adjusted properly.
- Safety Belt. Belt must be adjusted correctly and secured to appropriate safety D-Rings. When seated in a seat, the safety belt for the seat **must** be worn **in addition to** the personal safety belt.

Chapter 5
Operations

Overview

Introduction

This chapter describes how to use the 44' MLB in a safe, efficient manner. There are limitations on just how specific such instruction can be. The policies and techniques set forth here provide an outline of necessary actions and the DO'S and DON'TS that are a product of field experience with boats of this design.

Local operating conditions, district regulations, and the skill of the crew will determine how much of the capability of this motor lifeboat is used.

The 44' MLB is neither an especially fast nor powerful boat. It is constructed with one primary goal - to survive and travel through heavy seas. It will not outrun the seas, and it can be stopped cold by surf of excessive size.

This boat is a highly visible symbol of the Coast Guard, and its operation should serve as an example of safe boating. Always be aware of wind and current conditions, and watch for any changes. Learn the limitations of this boat, but most importantly, learn your own limitations. Do not allow your boat to take you past them. The sea provides little room for error and is most unforgiving of mistakes.

In this chapter

This chapter contains two sections.

Section A. Operating Parameters

A.1. General

The readiness of the 44' MLB shall be continuously monitored to insure that it is capable of unrestricted operations. This monitoring is accomplished through a variety of programs, including daily boat checks, the boat PMS schedule, annual engineering inspection, annual Ready for Operations (RFO) evaluations, and biennial Standardization Team Visits.

For the purpose of this section, Operational Commanders are defined as commanders of Groups, Activities, Air Stations, Districts and Greater Antilles Section, who exercise direct operational control of a subordinate unit with a standard boat. See Chapter 1, Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24A.

Operating parameters for the MLB and crewmembers include the following areas.

A.2. Disabling casualties

Disabling casualties are those which make the boat not serviceable. Appendix F contains a listing of disabling casualties. If a disabling casualty is identified when the boat is moored, the boat shall not get underway until the casualty is corrected.

NOTE

- The Operational Commander may authorize, in writing, the movement of the boat (for short distances) under its own power only to facilitate haul-outs or corrective maintenance. In the event that the boat sustains a disabling casualty while underway, the boat shall immediately return to the nearest safe mooring, if able. In many cases the boat will require assistance from another vessel.

Disabling casualties shall be reported immediately to the Operational Commander by the most expeditious means, followed up by a boat status message as soon as possible, but no later than 12 hours after the casualty is discovered. The boat shall be immediately placed in Charlie status and repaired. If the casualties cannot be repaired within 48 hours, a CASREP shall be sent within 24 hours of the casualty.

A.3. Restrictive discrepancies

Restrictive discrepancies are those which restrict the operations of the boat such that it can perform some missions, but not all missions safely. Appendix G contains a listing of restrictive discrepancies.

A.3.a. Reporting restrictive discrepancies

Restrictive discrepancies shall be reported to the Operational Commander if the discrepancy cannot be repaired within 1 hour. The boat shall be immediately placed in a Charlie status and shall not get underway until the discrepancy is corrected, or a waiver has been received. If the discrepancy cannot be repaired within 48 hours, a CASREP shall be sent within 24 hours of the discrepancy. The Operational Commander is responsible for monitoring the progress of repairs to these discrepancies.

A.3.b. Waivers

Boats with restrictive discrepancies shall only be operated if a written waiver has been issued by the Operational Commander. The waiver shall:

1. list the discrepancy,
2. describe the conditions under which the boat may be operated, and
3. concurrence on the measures to be taken to lessen or negate the hazard posed by the discrepancy.

A verbal waiver is authorized, as long as a written waiver follows it up within 4 hours.

A.3.c. Discrepancy underway

In the event the boat sustains a restrictive discrepancy while underway, the Coxswain should not normally proceed without authorization, unless aborting the mission would increase the level of risk to the person(s) or vessel being assisted. The situation and recommendations must be effectively communicated to the Operational Commander to allow for prudent risk assessment by all levels.

The reporting procedure is as follows:

Step	Procedure
1	The coxswain shall immediately notify the parent unit with all pertinent information and a recommendation as to whether to continue or abort the mission.
2	The parent unit shall pass along the information pertaining to the casualty, the current mission, and recommendations to the Operational Commander.
3	The Operational Commander shall immediately notify the unit as to whether or not continuing the mission is authorized, and the conditions under which the boat may be operated.

A.4. Major discrepancies

Major discrepancies are those that degrade the effectiveness of the boat to perform one or more missions. Appendix G contains a listing of major discrepancies. The occurrence of major discrepancies shall be documented. A plan to correct these discrepancies shall be formulated and carried out. The Operational Commander is responsible for monitoring the status of repairs to these discrepancies.

A.5. Minor discrepancies

Minor discrepancies do not affect the operational readiness of the boat. However, a boat with minor discrepancies does not meet the standardization criteria established for the boat. The occurrence and repair of minor discrepancies shall be documented and monitored at the Station/Unit level.

In the event that the addition of portable equipment, not part of the standard boat outfit, is necessary to meet mission needs; units are authorized to temporarily carry this extra equipment. This authorization is on case by case basis only, and care must be taken to properly secure any extra gear and to ensure it does not interfere with safe egress or the boat's standard outfit/systems. Under no circumstances shall permanent alterations be made to power, stow or in any way accommodate extra equipment.

A.6. Responsibilities

The Coxswain is always responsible for the safe operation of the boat. The coxswain must decide if the mission warrants subjecting the crew and boat to the danger defined by the mission, weather and sea conditions anticipated.

A.6.a. Disabling casualty - underway

In the event that the boat sustains a disabling casualty while underway, the boat shall immediately return to the nearest safe mooring, if able. In many cases the boat will require assistance from another vessel.

A.6.b. Restrictive discrepancy - underway

In the event the boat sustains a restrictive discrepancy while underway, the Coxswain should not normally proceed without authorization, unless aborting the mission would increase the level of risk to the person(s) or vessel being assisted. The situation and recommendations must be effectively communicated to the Operational Commander to allow for prudent risk assessment by all levels. The following is the procedure for communicating the discrepancy while underway:

Step	Procedure
1	The coxswain shall immediately notify the parent unit with all pertinent information and a recommendation as to whether to continue or abort the mission.

Step	Procedure
2	The parent unit shall pass along the information pertaining to the casualty, the current mission, and recommendations to the Operational Commander.
3	The Operational Commander shall immediately notify the unit as to whether or not continuing the mission is authorized, and the conditions under which the boat may be operated.

Casualty/Discrepancy	Consequence	Required Action
Disabling Casualty "Boat is not serviceable"	Not authorized to get u/w.* Notify Operational Commander immediately by most expeditious means, follow up by a boat status message.	Assign "Charlie" status to the boat, and commence repairs immediately. Submit CASREP if applicable.
Restrictive Discrepancy "Boat and crew cannot perform all missions safely."	Operations restricted. Notify Operational Commander if repairs cannot be made in 1 hour.	Create repair plan and set deadline for completion of repairs. Operational Commander shall monitor progress of repairs. Any operations before restrictive discrepancies are repaired require written waiver (See A.3.b. above) from the Operational Commander. Submit CASREP if applicable.
Major Discrepancy "Boat and crew can perform all missions but some degradation in effectiveness or readiness should be expected."	Operations unrestricted. Discrepancy occurrence, and repair is documented.	Maintenance plan is carried out, Operational Commander shall monitor status of repairs to the discrepancies.
Minor Discrepancy "Boat and crew readiness not affected nor impaired. Boat does not meet standards."	Operations unrestricted. Discrepancy occurrence and repair is documented.	Maintenance plan is carried out. Station CO/OIC monitors completion of maintenance/repair.

A.7. Environmental limits

The 44' MLB is built to operate safely under heavy weather conditions within its design limits. With approval from the operational commander, crews may operate the boat in conditions that exceed the environmental limits; however, the coxswain is ultimately responsible and must always make the final determination whether the boat and crew can safely perform the mission.

- 30' seas
- 20' surf (breaking seas)
- 50 knots sustained winds
- 50 nautical miles offshore
- 125 displacement tons tow load

NOTE

These limits may be exceeded by approval of the operational commander, ONLY after appropriate risk assessment for the situation at hand is made. On-scene conditions provided by the on-scene commander and MLB coxswain must be considered in the risk assessment process. The coxswain retains the final on-

Section B. Performance Data

B.1. General

The fuel capacity is considered to be 313 gallons at 95% capacity. The usable amount of fuel at 95% capacity is 303 gallons do to the positioning of the fuel intake lines. Accurate fuel soundings will be difficult under active sea conditions and fuel estimates should be based on operating hours per given RPM. The following table provides estimated gallons per hour used based on the engines' operating speed (RPM).

Fuel/Speed Curve			
RPM	**Gals/Hr**	**Speed (knots)**	**Range(NM)**
1400	4.4	8	550
1750	9.2	9	295
2100	12.4	10	243
2450	21.0	11.5	165
2800	26.3	14	164

NOTE

The following items can affect fuel usage, operating range, and speed of the MLB:

- Engine tuning,
- Operating area,
- Helmsman skill (frequent course changes decrease mileage),
- Weather conditions (active seas will require more power and the boat will not move in a straight line), and
- Towing operations.

Chapter 6
Mission Performance

Overview

Introduction

The descriptions and procedures discussed in this manual are as specific as possible. Amplifying information may be found in *COMDTINST M16114.5 (series), the Boat Crew Seamanship Manual.* The only way to learn these evolutions is to actively train.

In this chapter

This chapter contains these sections.

Section A. Starting Procedures

A.1. Pre-start Checklist

The following procedures must be followed before starting a cold engine, and should be repeated before and after each mission.

Step	Procedure
1	Energize the main breaker and general lighting on the circuit breaker panel located on the mess deck.
2	Check for fuel or excessive water in the bilges.
3	Check all fluids levels.
4	Open sea suction valves, and check sea strainers for cleanliness.
5	Check to see that fuel supply and return valves are open. Sound the fuel tank using the sounding stick.
6	Inspect linkages, check all belts for proper tension. You should be able to depress the belt only about 7/16 inch per foot of span.
7	Secure shore-tie power at the boat AC power panel and at the dockside; then disconnect the shore power cable.
8	Ensure all A/C electrical power switches are in the "Off" position.

A.2. Start Up Instructions

Use the following procedures to start the engines.

Step	Procedure
1	Ensure throttles are in the neutral position, engine stops, and neutral throttles are pushed in.
2	Check the engine room alarm and safety cut-out switches are in the proper positions.
3	Energize starting and alarm breakers on the 24V DC power panel.
4	Depress starter button and hold until engine starts. If an engine does not start within 15 seconds, allow it to stand for 30 seconds, then repeat the procedure. If it still does not start after three tries, consult the maintenance manual. Possible causes are: • Fuel not getting to engine. • Water in the fuel. • Insufficient air to engine.

Step	Procedure
	• Dead or weak batteries. • Short in an electrical system.
5	Repeat Step 3 for other engine.
6	When the engine starts, check for proper oil pressures and water temperatures.
7	Check raw water system to ensure adequate circulation.
8	Inspect the engines for external water or oil leaks, or other abnormal conditions

A.3. Engine temperature

The Hot-starts keep the engine temperatures around 120° F through use of shore tie power. When practical, get underway as soon as the check-off procedures are completed. Diesel engines warm up best under a medium load. Long periods of idling are not good for a cold engine. Idling cold engines for checkout should be minimized and idling the engines for any period of time longer than 10 minutes should be avoided. The following table provides normal gauges readings.

Gauge	Idle	Cruising
Tachometer	750 rpm	2,380 rpm
Lube Oil	10-20 PSI	40-60 PSI
Marine Gear Oil	120-160 PSI	
Water Temperature	160-185°F	

A.4. Getting underway

The 44' MLB will respond very slowly when placed in gear at low RPM's. This is ideal for pulling away from, or into a mooring. Experience will show you just which forward/reverse power application to use when maneuvering within a confined area. Water depth, current flow, and other variables affect the boats reaction.

A.4.a. Observe systems

Once underway, observe how all systems are reacting and interacting.

1. Are the gauges steady and within the normal range?

- A falling or steady low oil pressure reading indicates a probable oil leak.
- A rapidly rising temperature gauge, passing normal limits, may well mean a burned-out impeller or other breakdown in the cooling system.

1. A pronounced steady vibration, probable with loud noise below, is a likely indication of a bent shaft or propeller.

2. Is the boat responding normally? If not, isolate the problem and repair it.

3. Does all electric gear function properly? If not, the cause should be detected and repaired before departing the station.

A.4.b. Increasing speed

Increase speed gradually, in steps, to allow engines to warm up thoroughly. Unless absolutely necessary, avoids using maximum RPM until the engine temperature has reached 140 degrees.

CAUTION !

1Do not exceed 2380 RPMs for more than 2 continuous hours.

Section B. Handling Characteristics

B.1. Stability The MLB is self-righting and self-bailing. Its construction and outfitting place the center of gravity low so it will return naturally to the upright position in any weather conditions.

B.2. Buoyancy The boat has nine watertight compartments which, if properly maintained, render it completely unsinkable in the normal sense of the word. No 44' MLB has ever sunk. Only a major collision underway will do serious damage to the buoyancy of this boat.

B.3. Strength The hull is constructed of $^{3}/_{16}$-inch Corten steel; a high tensile-strength alloy. It is framed by a combination of transverse and longitudinal members.

B.4. Speed The maximum speed of the 44' MLB, depending on the age of the machinery, engine tuning, and environmental conditions, is 13-14 knots at 2,800 RPM.

B.5. Steering The MLB is fitted with hydraulic steering, which markedly decreases the effort necessary to reach and hold a course. Hydraulic pressure magnifies any force exerted by the helmsman and then freezes the rudder in place until the wheel is moved again.

B.6. Stopping Displacement hulls, by design provide little resistance to water flow and will coast for a considerable distance if power is cut. In an extreme situation, the boat can be stopped very quickly by moving the throttles directly from ahead to full astern. Tests in 45 feet of water show the boat is capable of stopping within a space of 94.4 feet in seconds when the boat was traveling at 14 knots.

WARNING 1Transition from full ahead to full astern should not be used except in an extreme emergency.

B.7. Weathervaning The boats center of gravity is amidship. This fact, coupled with the presence of superstructure areas both fore and aft, causes the boat to pivot on this center axis as winds hit it. Left alone, it will swing back and forth to an angle, 25 to 30 degrees off the prevailing wind direction.

B.8. Following seas

Widely spaced rolling swells present no problem to this boat, provided the operator is alert. The rounded cruiser type stern present little obstruction for the sea to act upon. However, buoyancy considerations have produced a very shallow draft stern which, left alone, will move freely into a broaching position. Exercise caution and steer into any tendency of the stern to slip sideways, especially in short, choppy seas.

B.9. Head seas

The prime consideration here is to maintain a comfortable speed. The boat's sturdy construction allows it to break easily through oncoming seas. Its shallow draft, however, makes it very active. You will want to find a speed which gives the best ride. Keep the screws in the water at all times, and avoid burying the bow in a wave.

B.10. Beam seas

If your course is broadside to heavy swells, tack across the swell at a slight angle in zigzag fashion. Make each tack as long as possible, adjusting for the most stable ride. Remember, seas directly off the boat's beam will cause a lively rolling motion that can be uncomfortable.

B.11. Surf operations

See Surf Operations section in Section G of this chapter.

B.12. Ice operations

The MLB is not designed to break ice. However, the same high strength hull construction necessary for surf operations makes the boat capable of operating in ice if reasonable caution is used.

CAUTION !

Ice operation in greater than 6 inches of ice, or operations causing ice to contact the running gear can cause damage to props, shafts, and engine mounts.

The boat may not be able to free itself from hard ice over 3 inches thick once frozen into it (as may be encountered during overnight mooring). Once underway, it moves through ice up to 6 inches thick provided the following rules are applied:

- Move at Idle Speed. It is not possible to determine the thickness of ice by looking at it. A sudden patch of 12-inch ice can appear in a clear field averaging 3 inches. This will stop the boat suddenly.
- No sharp turns.
- Ensure the engine room De-Icing system is operating.
- Watch engine temperature and check sea strainers regularly. Slush can clog them.
- Be aware that freezing spray may seal hatches and scuttles thus limiting immediate or emergency access (i.e. aft survivor's compartment).
- Excessive topside icing will change the stability and righting arm.

Section C. Towing

C.1. General

The 44' MLB has enough power, and the right equipment to handle any emergency towing job likely to be encountered. The coxswain should consider all factors concerning weather, sea state, distance, and size of vessel before attempting each tow. General towing limitations established for this boat are set at 125 displacement tons. In less than favorable conditions, it may not be possible for the MLB to handle towing vessels of this size.

C.2. Detailed information

Detailed information on towing procedures and practices are contained in *COMDTINST M16114.5 (series), the Boat Crew Seamanship Manual.*

Section D. Anchoring

D.1. General

The 44' MLB does not often drop anchor; a boat designed for rough seas rides poorly at anchor, and the low rate of fuel usage makes it practical to continue moving in many cases. However, the boat is fitted with an anchoring system used when the boat must stand by a location.

D.2. Anchoring equipment

Removing the stainless steel expansion hawse pipe plug, find the hook built into its other side. Suspended from this hook with a ½-inch shackle is 9 feet of ½-inch BBB anchor chain. A ½-inch swivel forms the connection of the anchor chain to a thimble, spliced into the end of the anchor line. This is secured to the tow reel with small stuff that must be broken loose. This shackle is attached to the 60 pound Danforth anchor when preparing to anchor. The anchor should not remain attached to the anchor line while routinely underway.

D.3. Detailed information

Detailed procedures and instructions on anchoring are contained in *COMDTINST M16114.5 (series), the Boat Crew Seamanship Manual.*

Section E. Personnel Recovery

E.1. General

The MLB, with its ability to operate in heavy weather, and its twin props and rudders, is designed to be able to maneuver in almost any conditions to retrieve a person in the water. Personnel recovery drills conducted in all weather conditions are essential training for any coxswain.

E.2. Detailed information

Personnel recovery procedures are contained in *COMDTINST M16114.5(series), the Boat Crew Seamanship Manual.*

Section F. Firefighting

Overview

Introduction

The 44 foot MLB is outfitted with the standard tools and equipment to fight fires aboard the boat itself, as well as on other vessels.

In this section

This section contains the following information.

Equipment

F.1. Primary system

The primary system (for non-electrical fires) uses sea water, fed by a 120 gpm fire pump driven by a power takeoff from the port main engine. The pump drives water through a single 1-½ inch fire main outlet located on the starboard side, forward of the engine air vent.

CAUTION !

1Do not exceed engine RPM of 1500 while the fire pump is engaged.

F.2. Equipment for fires on other vessel or ashore

For fires on another vessel or ashore, the following equipment is carried:

- Standard Dewatering Pump Kit
- 2-½ inch Eductor Discharge Hose, 25 feet
- 1-½ inch Fire Hose, 50 feet (2)
- 1-½ inch Fire Hose, 25 feet
- 1-½ inch and 2-½ inch spanner wrenches
- Vari nozzle
- Eductor, 1-½ inch inlet, 2-½ inch discharge
- In-line proportioner

Procedure

F.3. Prevention

Of course, the best firefighting procedure is to prevent the fire from starting. You can help prevent fires by doing the following:

- Keep oil and grease out of the bilges.
- Clean any spilled fuel or lube oil immediately and ensure it is properly disposed ashore.
- Properly stow cleaning materials.
- Keep all areas free of waste material.
- Use proper containers for flammable liquids.
- Vent all spaces thoroughly before starting engines.
- Be alert for suspicious odors and fumes.

F.4. Procedure

A boat crew of less than four is ill-prepared to conduct firefighting and dewatering operations on another vessel. Transferring members of your crew to another boat will tend to leave the lifeboat and its crew vulnerable.

The first priority is the safety of personnel and your vessel. For detailed firefighting procedures, see *COMDTINST M16114.5 (series) Boat Crew Seamanship Manual.*

Dewatering

F.5. Procedure During the firefighting process, great quantities of water will be pumped into the stricken vessel. Since the water has no place to go, the boat will sink as the fire is extinguished unless you remove the water.

F.5.a. Board boat — As soon as fire conditions permit, board the boat and check for flood areas.

F.6.b. Determine source — Determine the source of flooding. If there is another source of flooding besides the firefighting hose, locate it and attempt to reduce the flow.

F.6.c. Eductor — If you remain on scene and attempt to dewater the vessel, your portable dewatering pump kit, depending on the model, may be the most powerful dewatering tool at your disposal. It is also the most practical device to use when sea conditions are too rough to stay alongside. If conditions permit the lifeboat to stay alongside, then the installed main engine pump with an eductor rigged is the most reliable dewatering method available. To rig the eductor:

Step	Procedure
1	Connect the inlet on the eductor to the fire main with a 50 foot length of 1-1/2 inch firefighting hose.
2	Connect the eductor discharge hose to the outlet side of the eductor, and run it overboard.
3	Start the fire pump; watch the eductor discharge hose to ensure it is running freely. If not, the eductor may not be dewatering; an obstruction of the line is the most likely cause.

CAUTION ! Any kink or obstruction in the discharge line will cause the eductor to pump water into the flooded area rather than out of it.

F.6.d. Dewatering pump kit — The dewatering pump kit carried aboard the MLB may also be used to dewater a vessel if necessary.

Section G. Surf Operations

Overview

Introduction

Operations in surf or bar conditions, or rough seas require constant action by the coxswain. It is not possible to outrun a wave with this boat nor maintain position on the back of a wave. Maintaining a 360 degree watch for approaching waves is critical. The coxswain must concentrate on positioning the MLB to avoid being caught under a breaking wave. If a breaking wave cannot be avoided, maneuvering to avoid the break itself is necessary. If possible, maneuver to meet a wave bow on. Generally, surf over 12 feet can capsize the boat if taken abeam or over the stern with forward way on, but smaller waves have been known to cause a roll over. The 44' MLB is self-bailing and self-righting. These characteristics were designed to protect personnel. No roll over should ever be considered routine. However, in the event heavy weather capsizes the boat, these characteristics are highly desirable. During a roll over, expect the boat to sustain considerable damage. When the engines are operating in the inverted position, they may lose up to two gallons of lube oil per engine. The engine room may take-on up to 350 gallons of water through its air vents.

In this section

This section contains the following information

Capabilities

G.1. General

With a capable crew, the 44' MLB can perform almost any SAR mission in extreme bar and surf conditions. To utilize the boat's capabilities, the crew must be completely familiar with its handling characteristics. Constant training and the use of good judgment is necessary to safely operate this boat in a heavy weather environment.

G.2. Height or surf estimates

Several factors should be considered before commencing surf operations, height of breaking surf has traditionally set the standard. Surf refers to the height of a breaking wave caused by a bar, reef or the shoreline and should not limit operations in larger offshore waves or non breaking bars. Height of surf estimates are very subjective.

G.3. Factors

Other factors should be considered as well. These include:

- the boat's seaworthiness,
- endurance and experience of the coxswain and crews,
- period and type of wave breaks,
- weather conditions and forecast, and
- the severity of the case or the potential benefits to be derived.

Operation

G.4. General

Surf operation with the 44 foot MLB is covered only briefly in this manual. The coxswain must understand different types and sizes of surf. Different operating areas require varied procedures, and cannot be fully covered in this publication. There is no substitute for actual underway training. Training should be performed in a variety of surf conditions in local operational areas. Allow coxswains to acquire the experience necessary to read the waves and get a proper feel for the capabilities and limitations of the MLB.

WARNING

Never allow the boat to be caught below a breaking wave. Begin to climb the wave in time to keep its top from falling on you. One cubic yard of salt water breaker will drop 1,500 pounds of water on the boat.

G.5. Procedures for transiting surf

The following is a procedure for transiting surf.

Step	Procedure
1	Prior to entering surf, advise the station of intentions.
2	Acquire bar conditions from all available sources (such as tower personnel, pilot boat, other vessels operating in vicinity, etc). It is difficult to effectively observe actual bar/inlet conditions from seaward.
3	Ensure the dodgers are rolled up, the main diesel engines are physically checked, and the crew is in protective clothing, helmets, and safety harnesses.
4	Stand off and observe wave trains.
5	Wait until the last big wave in the series has passed and then proceed inbound behind it.
6	Get as close to the last big wave in the series as possible. There is little chance of overrunning it.
7	Ensure a 360 degree lookout is maintained and do not let your attention wander.

G.6. Bow into surf

The 44' MLB is designed to take surf bow first.

Step	Procedure
1	As a breaking wave approaches the boat, keep your bow square to the sea.
2	Try to pick your route through the breaker hitting the "saddle" - that is, passing through the portion which has not broken, if possible. Breaker avoidance is the preferred alternative.
3	Increase power smoothly.
4	Gain some headway before the sea begins to lift the boat. However, not so much headway that the boat powers into the lower part of the wave, allowing it to break over the boat
5	Move smoothly up the wave until momentum and the MLBs weight causes the boat to push through to the other side. This momentum and the weight of the boat will carry it through the wave.
6	As the crest of the wave hits the bow, ease off the throttle.
7	Be prepared for the next breaking wave using the same procedure.
8	With experience, it is possible to "station keep" by using just enough power to meet the oncoming wave, thereby holding position.

G.7. Beam Surf

At times, it may be necessary to enter a surf zone with the boat's beam exposed to breaking waves. The MLB is extremely vulnerable in this position. Therefore, a high rate of speed is desirable, enabling the boat to arrive at its destination as soon as possible. Speed may be reduced to allow waves to pass ahead of the vessel, or increased to maximum throttle to avoid a breaker on the beam. Use the following procedure and guidelines when the MLB is entering a surf zone with the beam exposed to breaking waves.

Step	Procedure
1	The helmsman must be conscious of any and all approaching waves.
2	When it is obvious the boat will be overtaken by a breaking wave, the helmsman must retain speed or increase RPM, depending on wave height and boat's position, and turn to "MEET" the breaker with the bow.

Step	Procedure
3	The helm must then be returned amidships and the throttles decreased, to avoid launching through the crest.
4	It may be necessary to keep station and negotiate several breakers before applying power and returning to the original trackline.

G.8. Surf on Stern

When transiting an area with breaking waves on the stern, utmost caution must be observed. This is the MLB's most vulnerable position. Due to the semi-displacement construction of the MLB, the stern of the boat offers much less resistance to the surface of the water than the bow and has a tendency to "BROACH" when being overtaken by a swell or breaker. Use the following steps when transiting with breaking waves on stern:

Step	Procedure
1	The coxswain must observe the period and pattern of the breakers in the area about to be entered. This requires holding position outside the surf line and determining the safest route.
2	The coxswain must assess the series or sets of waves and proceed inbound behind the last swell of the series. In most instances there will be a short period of calmer water between each series of waves. This is referred to as a "LULL." This is the optimum time for the coxswain to proceed inbound, if safe to do so.
3	Sometimes the best option is to remain outside and wait for more favorable conditions. There are several techniques used to transit with surf or large swells on the stern. Local conditions and the experience level of the coxswain will determine which method is appropriate for the given situation.

Section H. Securing Procedures

H.1. Procedure Upon mooring, the following steps are necessary:

Step	Procedure
1	Secure all switches on the circuit breaker panel for electronic equipment with the exception of main, general light and start and alarm breakers.
2	Shutdown the engines by pulling up on the engines stops located on the coxswain console.
3	Secure start and alarm breakers along with safety cut-out and alarm switches.
4	Close sea chest valves.
5	Take and record fuel sounding; top-off tank if not already done.
6	Check and replenish as necessary all fluids levels.
7	Pump bilges using shoreside equipment, and wipe engines and bilges clean.
8	Stow all gear. Rinse fire and dewatering equipment, if used, with fresh water, and dry before stowing.
9	Visually inspect all hoses, wiring, belts and other items subject to wear.
10	Reconnect shore tie, and switch on breakers at the AC power panel located in the engine room, for battery charger, hot starts, and compartment heaters.
11	Inspect all watertight compartments and dog all hatches and doors.
12	Secure the main panel breaker on the DC panel.
13	Replace the dewatering pump kit, if used. Wash it out with fresh water, refill fuel tank, and ensure it is completely dry before repacking. Maintenance, inspection and packing procedures are outlined in COMDTINST M10470.10 (series), CG Rescue and Survival System Manual.

Chapter 7
Emergency Procedures

Overview

Introduction

This chapter describes emergency procedures and actions to be taken if a casualty to the boat or one of the boat's systems occurs.

The best casualty control action is to prevent casualties through good maintenace and proper seamanship. If a casualty does occur, there must be timely execution of a predetermined plan of action to correct and/or prevent worsening of the situation. Frequent underway casualty control drills both prepare and improve the crew's response.

In this chapter

This chapter contains these sections.

Section A. Capsizing

A.1. Preparation

Any surface activity big enough to roll the boat will bring it right back up. If your lower gunwale digs into the trough, prepare to roll over. Take a deep breath and hang on. Average time under water will be approximately 8 to 15 seconds. Although the boat was built to withstand a roll over, there will be damage.

A.2. Recovery

Step	Procedure
1	Once righted, assess the situation quickly. You will still be in the surf and must take the next wave correctly or the boat may roll again.
2	Check the crew to ensure no one was lost overboard or injured.
3	If the engines are still working, check for lines over the side and move to safe water.
4	Once in safe water, the engineer should go below to check for damage.
5	Secure the electrical circuit breakers with the exception of the VHF-FM Radio.
6	The engine room may be coated with water and oil presenting a fire hazard. Be sure to look through the port light in the engine room hatch for signs of a fire before entering. If there is no fire, the engineer should dewater the engine room with the installed eductor system.
7	Once this is accomplished, check the oil in both main engines (Engines must be secured to ensure an accurate reading).
8	Upon returning to the station all electronic and electrical equipment must be removed and cleaned.

WARNING

DO NOT HOOK UP THE SHORE TIE. The distribution panel in the engine room may be soaked with oil and water. Particular attention must be given to cleaning the following equipment.

- A/C Power Panel
- Alternators
- Battery charger
- Engine Alarm Panel
- Batteries
- Starter Motors

NOTE

ALL WIRING must be cleaned, dried, and a ground and insulation leakage test accomplished. The engine room must be washed down and the sound dampening material must be inspected. During a roll over this material becomes oil soaked and a fire hazard. All fluids and associated filters, such as reduction gear, hydraulic system, and main engine oil should be replaced.

A.3. Proceeding with the mission

After damage has been assessed, determine whether to proceed with the mission or return to the unit. The following factors should be considered:

- Condition of crew members;
- Overall condition of engines and boat structure;
- Condition of electronics, especially VHF-FM; and
- Urgency of mission.

NOTE

A backup means of communicatons is critical after a capsizing or knockdown. A portable VHF/FM radio is the best means of passing critical situation reports immediately following this type of situation.

Section B. Steering Casualty

B.1. General

The 44 foot MLB steering system is hydraulic and has an operating pressure of up to 500 psi. The system has a maximum pressure rating of 1000 psi, but the relief valve is set at 500 psi. A properly maintained system makes it close to being casualty free. Only high quality hydraulic hoses and fittings should be used. All hoses must be secured(with brackets) to eliminate chaffing. All through-hull fittings should be inspected frequently; the hose fittings attached to the ram are stressed the most.

WARNING

If a loss of hydraulic steering fluid occurs, failure to secure the starboard engine may result in damage to the engine and/or steering pump.

B.2. If casualty does occur

If a steering casualty does occur, the twin screws of the MLB allow boat control to be maintained with the rudders centered. If this is not possible, take follow the following steps.

Step	Procedure
1	Remove one of the rudder caps on the main stern deck.
2	Remove the tiller from its stowage area (bulkhead 21), and drop the socket end onto either rudder stock.
3	Remove the ram from the twin rudder, and lay it on the deck (Tie off ram to prevent damage).
4	The upper portion of the rudder stock is machined square to receive the emergency tiller.
5	In the case of loss of steering fluid, **secure** the starboard engine. The hydraulic pump may be removed by pulling the two mounting bolts. Take the coupling gear out and reinstall the pump. The engine may then be restarted to use for maneuvering if necessary.

WARNING

If a steering failure occurs while the MLB has a tow, do not rig the emergency tiller. Crew members working aft of bulkhead 17 during towing operations are placed in grave danger. Steer with engines and/or call for assistance if emergency repairs cannot be made.

NOTE

If the steering system fails while underway with no tow and you decide to rig the tiller, have the crew member use a safety belt attached to the aft rail.

Section C. Bilge Flooding

C.1. Forward compartment

The forward compartment and mess deck bilges must be pumped from the deck scuttle.

C.2. Well deck void

To sluice the well deck void, use the sluice valve located low on bulkhead 15 in the engine room. Water will drain into the engine room.

C.3. Lazarette

The lazarette can be sluiced into the aft survivor's compartment by the sluice valve located at bulkhead 21.

C.4. Procedure for bilge eductor system

When operating the bilge eductor system, the following steps shall be followed:

C.5. Engine room

Dewatering the engine room bilge is accomplished by using the fire pump discharge water and installed eductor. The suction line is run to the lowest point of the bilge.

Step	Procedure
1	Ensure valves to fire station riser and EDUCTOR suction line are CLOSED.
2	Open sea chest valve to fire pump.
3	Open EDUCTOR inlet and overboard discharge valves.
4	Engage fire pump.
5	Increase port engine speed to 1325 rpm's and ensure positive overboard discharge. Do not exceed 1500 rpm.
6	Slowly open valve in EDUCTOR SUCTION line, and pump bilges as necessary.
7	When pumping is complete, disengage fire pump and secure all valves.

WARNING

Operation of the bilge eductor system requires a crew member in the engine room at all times since the engine room can be flooded using this system.

NOTE

After the MLB has experienced a grounding, heavy seas, and/or surf, check all bilges. If any amount of water exists, investigate its source. Take corrective action as necessary.

Section D. Engine Room Fire

D.1. General

The greatest single potential for disaster on a boat is fire. Fire prevention is a necessity. The potential for fire may never be completely eliminated. It should always be considered a threat and must be watched for, and guarded against.

D.2. Inspect likely areas

The most likely areas for a fire to occur are the engines and the electrical panels. Almost every possible source of fire in these areas will give some advanced warning. Be alert and inspect the systems regularly.

D.2.a. Fuel line fires

Pinhole leaks in the fuel lines can be caused by cracking at loose brackets, or chaffing at contact points. Ensure chafing gear is used where needed.

D.2.b. Alternator fires

Alternator fires can result from burned out bearings, electrical shorts, or incorrect wiring. The alternator will smoke before it flames. Check engine spaces regularly when underway.

D.3. Keeping engines clean

Keep the engines free of oil, grease, and hydraulic fluid. None of the external engine parts are flammable (except the wiring), but waste oil will ignite and can cause great damage.

D.4. Upon observing smoke

Upon observing smoke, engines should be secured, the engine room hatch dogged and engines monitored through portlight. Pull the fuel stops and secure all DC electrical breakers except the VHF-FM and the main breaker. Stand by the HALON discharge valve to activate if necessary.

WARNING

A by-product produced when burning Halon 1301 gas in a diesel engine is poisonous bromine gas. There is only enough Halon in the system for one extinguishing attempt. FOLLOW THE DIRECTIONS AND EXTINGUISH THE FIRE THE FIRST TIME.

D.5. Before discharging Halon

You should wait approximately 5 seconds after pulling the engine stops before discharging the Halon. This provides the engines a chance to come to a dead stop.

NOTE

You should carefully assess the damage of the fire before entering the engine room or attempting to restart engines. The prudent action may be to do nothing other than to call for assistance.

D.6. Operating Instructions

Operating instructions for Halon 1301 fire extinguishing system are as follows.

Step	Procedure
1	Secure engines
2	Clear engine room of personnel.
3	Close and dog engine room door.
4	Pull emergency fuel cut-offs.
5	Secure electrical power (except VHF-FM).
6	Pull pin and discharge halon.
7	Keep engine room door closed for 15 minutes
8	Ventilate compartment for 15 minutes.

CAUTION !

Because of the many different type of materials in the engine room, the presence of harmful vapors and toxic gases are a distinct possibility. Use EXTREME CAUTION and COMMON SENSE before entering.

Section E. Main Engine High Water Temperature

D.1. Procedure Main Engine overheating may occur on the 44 foot MLB, if this happens you should take the following actions:

Step	Procedure	
1	Reduce engine rpm's.	
2	Investigate. If steam is present or engine temperature is above 220 degrees, SECURE ENGINE.	
3	If no steam is present, feel salt water pipes on affected engine, if pipes are warm take the follow actions.	
	a	Check sea suction valves.
	b	Check sea strainers.
	c	Check raw water pump.
4	If no steam is present, and salt water pipes are cool take the following actions:	
	a	Check Fresh Water pump belts.
	b	Check for obvious water leaks including the underway heater system.
5	Check lube oil for quantity and quality.	

WARNING Removing expansion tank cap while engine is hot may cause coolant to flash to steam causing serious burns.

Section F. Loss of Lubrication Oil Pressure

F.1. General If there is a loss of engine lubrication oil pressure, you should take the following actions:

F.1.a. Reduce engine rpms

Reduce engine rpm's and identify which engine has lost lube oil pressure. Shut down the affected engine immediately unless circumstances warrant continued operation due to safety of the crew.

WARNING If engine oil pressure gauge reads zero, SECURE engine immediately.

F.1.b. Check for problems

Check the following:

- Oil level
- Obvious oil leaks
- Expansion tank contamination
- Fuel Oil dilution
- Faulty sensor (check upon return to dock)
- Blown oil cooler (check upon return to dock)

Section G. Loss of Engine RPM Control

G.1. Procedure If loss of engine RPM control occurs, the following steps should be taken:

Step	Procedure
1	Bring both throttles to idle ahead.
2	Pull engine stop for affected engine.
3	Turn into the affected engine, to put load on engine.
4	Pull emergency fuel cut-off
5	Trip the emergency air shut down on front portion of blower.

WARNING DO NOT use Halon firefighting system to secure engines.

Appendix A

44 Foot Motor Lifeboat
Outfit List And Stowage Plan

FOREPEAK	QTY	LOCATION
Anchor Line, 3"Dbn	300'	On Reel Amidships
Shackle, Wire-Moused (1/2")	2 EA	Attached To Anchor Chain
Anchor Leader Chain (1/2"BBB)	9 FT	Attached To Anchor Line
Swivel (1/2")	1 EA	Attached To Anchor Line
Thimble	1 EA	Attached To Anchor Line

FORWARD COMPARTMENT	QTY	LOCATION
Battle Lantern	1 EA	Bulkhead 1, Port Side
Fire Extinguisher, 5# PKP	1 EA	Bulkhead 5, Port Side
Dogging Wrench	1 EA	Bulkhead 1, Port Of Door
PFD's, Type I, adult size, CG-Approved	7 EA	Under Starboard Seat
PFD's, Type I, child size, CG Approved IAW COMDTINST M16114.10(series)	3 EA	Under Starboard Seat
Wool Blankets	4 EA	Under Port Seat
Covered Pillows	2 EA	Under Port Seat

MESS DECK COMPARTMENT	QTY	LOCATION
Battle Lantern	1 EA	Bulkhead 5, Port Side
Fire Extinguisher, 5# PKP	1 EA	Bulkhead 5, Port Side
Fire Extinguisher,5# Co2	1 EA	Under Ladder
Fixed Halon Extinguishing System	1 EA	Under Ladder
Clock	1 EA	Port Side Above Ladder
Fuel Sounding Rod	1 EA	Inboard On Ladder
BINOCULARS (7x50)	2 EA	Cubby Hole, Port Side
Towline Reel Hand Crank	1 EA	Cubby Hole, Port Side

MESS DECK COMPARTMENT	QTY	LOCATION
Navigation and Interior Light Bulbs/Fuses	AS REQ	Cubby Hole, Port Side
T-Handle Wrench	1 EA	Cubby Hole, Port Side
Mouth Horn, Reed, Fog	1 EA	Cubby Hole, Port Side
Ear Protectors	2 PR	Inboard Ladder Handrail
Boat's Bell(when not on mast)	1 EA	Cubby Hole, Port Side
Flashlight w/Red Lens	1 EA	Cubby Hole, Port Side
Chart Box(*)	1 EA	Bulkhead Above Port Seat

* REQUIRED CONTENTS	
1. Charts (As Required)	6. Weems/Parallel Ruler
2. Dividers (2)	7. Compass Deviation Table
3. Pencils (As Required)	8. Search Pattern Slide Rule
4. Rpm/Speed/Fuel Curve	9. Tide Book
5. Nautical Slide Rule	10. Navigation Rules CIM 16672.2 (series)
	11. Light List and Coast Pilot (Local Sections)

Damage Control Kit	1 KT	Under Port Seat
• Suggested Kit Contents As Per 44' MLB Boss Manual (Less Eductor)		
Hot Cups and Receptacles	2 EA.	Starboard Side in Receptacles
Boat Pyrotechnics	1 KT	Under Sink
I.A.W. COMDTINST M8000.2 (Series)		
Emergency Rations	AS REQ	Under Sink
Emergency Spare Parts (*)	1 KT	Under Sink

* Contents	
1. Electrical/Duct Tape (1 Rl Ea.)	4. Raw Water Pump Gasket (2)
2. Primary Fuel Filter (2)	5. Raw Water Impeller
3. Fresh Water Pump Belt Set	6. Alternator Belt

Engineer's Tool Kit	1 KT	Under Sink
Approximate Size 18"x 8"x 8"		
First Aid Kit, 10 Man	1 KT	Above Sink
Paper Towel Dispenser	1 EA	Above Sink, On Head Bulkhead

MESS DECK COMPARTMENT	QTY	LOCATION
Portable Marine Toilet	1 EA	In Head Space
Heavy Weather Safety Belt	5 EA.	In Head Space, On Bracket

MAIN DECK	QTY	LOCATION
Danforth Anchor (60#)	1 EA	In Brackets On Cabin Top
Life Ring, 30"Dia, w/75' of 1/4" Floatable Line	2 EA	Port And Starboard Side in brackets attached to lifeline stanchions
Float Light, w/Attachment Line	2 EA	Port And Starboard Side in brackets adjacent to life rings
Boats Hooks, w/Wooden Handles	2 EA	Port And Starboard Side, hung on life lines
Towline, 3"DBN, 600'	1 RL	On Towing Reel
Pump, Floatable, Dewatering (P-5)	1 KT	Starboard Side, In Brackets
Boat's Bell	1 EA	On Mast
Heaving Lines	2 EA	Coxswain's Screen
Floatable Heaving Line	1 EA	Coxswain's Screen
Diver's Knife	1 EA	Coxswain's Screen

AFT SURVIVOR'S COMPARTMENT	QTY	LOCATION
Fire Extinguisher, 5# PKP	1 EA	Bulkhead 17, Port Side
Drogue w/200' 2"DBN	1 EA	Under Port Seat
Alongside Lines (Four minimum.)	AS REQ	Under Port Seat
Fenders	4 EA	Starboard Overhead Rail
Grapnel Hook, 4#	1 EA	Under Port Seat
Skiff Hook (w/Pendant)	1 EA	Under Port Seat
Chafing Gear	AS REQ	Under Port Seat
Bridle	1 EA	Under Port Seat
Assorted Shackles	AS REQ	Under Port Seat
Swimmer's Harness, (w/minimum of 100' of 5/16"Line)	1 EA	On Stokes Litter
Swimmer's Mask, Snorkel and Fins	1 SET	On Stokes Litter
Emergency Medical Kit	1 EA	Starboard Side Technician's Kit
Hand Resuscitator	1 EA	Starboard Side
Emergency Oxygen Kit	1 EA	Starboard Side

AFT SURVIVOR'S COMPARTMENT	QTY	LOCATION
Stokes Litter	1 EA	Starboard Side Above Seat
IAW COMDTINST M10470.10 (Series)		
Educator	1 EA	Under Starboard Seat
In Line Proportioner	1 EA	Under Starboard Seat
Spanner Wrench, Adjustable	2 EA	Under Starboard Seat
Vari Nozzle	1 EA	Under Starboard Seat
Discharge Hose (2-1/2"x25')	1 EA	Under Starboard Seat
Fire Hose (1-1/2x50')	2 EA	Under Starboard Seat
Fire Hose (1-1/2"x25')	1 EA	Under Starboard Seat
Fire Ax	1 EA	On Face of Starboard Seat
Battle Lantern	1 EA	Bulkhead 21
Dogging Wrench	1 EA	STDB of WTD, Bulkhead 21
Emergency Tiller	1 EA	Bulkhead 21

ENGINEROOM	QTY	LOCATION
Battle Lantern	1 EA	On Starboard Vent
Lube Oil (2104)	5 GAL	Starboard Side In Brackets

44 Foot Motor Lifeboat
Boat Alterations (BOATALTS)

BOAT ALT NUM	SUBJECT	Blue Print	DATE
1	**Modified Propeller Shaft Strut details** Install additional diagonal strut support from strut hub to hull plating.	4302-1	5/63
2	**Windshield Modifications** Installation of stainless steel window reinforcement plates and locking dogs	1203-1-ALT-G	7/63
3	**Installation of Electro-Chemical Chlorinator** Chlorinator with 115 VAC motor at top of tank		7/63
4	**Relocation of Electronic MG sets and starting accumulators.** Relocate equipment. **Note:** Obsolete by Boatalt (47).	1112-3-ALT-F 1112-2	11/63
5	**Towing Protection** (Link fence protective barrier) **Note:** Obsolete by Boatalt (47). ***Amend (1) Towing Protection*** Link fence protective barrier, Material SUBSTITUTION, plastic coated 1 ¼" mesh with wire core diameter of 14 gauge and finish plastic of 12 gauge **Note** obsolete by Boatalt (47).	1205-1	2/64 6/64
6	**Hydraulic Steering Booster Pump Modification** (Pump mounting, driver pulley's, and drive belt modification). **Note** obsolete by Boatalt (46).	2200-53	3/64
7	**Char-Lynn Steering Modification** Installation of 17..8 cubic inch metering head kit		5/64

8	**Towing Protection** **Note:** Obsolete by Boatalt (47).		6/64
9	**Main Engine Gauge Panel Modification** Installation of mechanical gauges, audible alarm bell, and alarm indicator lights	1107-1 (alt E) 6202-2 (alt J), 8700-3.	7/64
10	**Main Engine Gauge Panel Modification** Mechanical gauge type, material identification, alarm test system identification	6202-2(alt-J), 8700-3.	4/65
11	**Bolts for Engine Hatch** Removal of huck bolts, install 3/8" stainless steel slotted pan head screws		1/67
12	**Hydraulic Start Control Valve Cover** Cover installation to prevent accidental depressing of the manual start control valve **Note:** Obsolete by Boatalt (20).	4103-77	7/67
13	**Installation of new type high capacity alternators.** (Motorola, 2000 watt, 70 amp alternators).	6100-25	9/67
	Amend(1) Installation of high capacity alternator Addition of reverse polarity protective relay, voltmeter, indicator light, and starting excitation switch/eliminates the lube oil pressure switch)	6100-26.	4/68
	Amend(2) Installation of high capacity alternator Installation of voltage protector and 68 OHM resistor	6201-21-D	6/69
	Amend(3) Installation of High capacity alternator Motorola alternator installation guidance and required changes to 24 VDC distribution panel wiring.	6201-21-F	5/72
14	**Capitol Clutch and Gear Change** Obsolete clutch and gear; replacement Model 4HE 10700 **Note** obsolete by Boatalt (46).		9/67

15	**Strut Modification** Replace present cutlass bearings with bearings not requiring babbiting using B.F. Goodrich, KNAVE bearings. Replace strut hub material with seamless low carbon steel mechanical tubing.	4302-3.	11/67
16	**115 Volt AC Meter Installation** Install AC voltmeter to monitor motor generator sets to electronic equipment.	6901-1	3/68
17	**Borg Warner Clutch and Gear Change** Replace Borg Warner 72Cand 72CR clutch and gear assembly with the heavy duty AS5-73C and AS5-73CR clutch and gear assembly.		4/68
18	**Hose System Replacement** Replace existing failed hose systems with Aero-quip hose products		5/68
19	**Change in location of 115 Volt AC Receptacle Outlet Box** Move the 115 AC receptacle from above the batteries due to potential hazards of sparking on the batteries. Relocate to the port side of the engine room at Frame #9.		2/69
20	**Electric Start** Remove hydraulic starting system components; Install electric starter motor. Accomplishment of this boatalt also requires completing boatalt 13 for clearance in area of alternator and starting motor installations.		8/68
21	**Propeller Shaft** Material change from MONEL shaft to high strength K-MONEL shafts	4000-2(ALT-G) 44301 44324. 4000-3(ALT-3-D) 44325-44336. 4000-53 44337-44349. 4000-4(ALT-H) 44350-44387	10/68

22	**Safety Rail, Port light And Additional Engineroom Lighting.** Additional 24 VDC lighting for engine instrument gauge illumination; Install 10" portlight for engineroom observation and fire extinguisher discharge; Install safety rail behind helmsman chair on main deck	1202-4	4/69
23	**Installation of Nylon Dodger.** Crew protective enclosure for cold and severe weather conditions. **Note:** Obsolete by boatalt 47.	2406-1	5/69(D)
24	**Hydraulic Steering** Installation of: • Char-Lynn UMC Orbitrol power steering; • Reservoir, • Relief Valve, • Needle Valve, • Pressure Gauge, • Steering Cylinder, • Steering Control Unit	2200-7-R P.02	5/69
25	**Navigation Lights and Rotating Blue Light.** Update towing and navigation lights for compliance of Rules of the Road; Installation of Rotating Blue Light at bracket of center towing light ***Amend(1) Navigation Lights And Rotating Blue Light*** Installation of 20 point white light between the present upper towing/forward navigation light and lower towing light. Install navigation light rotary switch; Relocate blue light above or preferably below the new center towing light. Install engraved rotary switch instruction plate.	6405-29 6405-29-D	8/69 9/69

26	**Removal of Electronic Equipment from Bulkhead No. 5.** Removal and relocation of electronic equipment due to excess weight on bulkheads. **Note:** Obsolete by Boatalt (47).	6700-55	9/69
27	**Installation of Anchor Bed Assembly** 60 pound dansforth anchor bed strengthening; plug and smooth all openings. 28 pound dansforth may be reinstalled at District Commanders discretion ***Amend(1) Removal of 28 Pound Anchor*** Cancels the OPTION of carrying the 28 pound anchor; fill all holes by welding and check for watertightness	2605-52	10/69 10/83
28	**AN/URC-45 VHF-FM Equipment Installation** Install AN/URC-45 VHF/FM Transceivers and power supply and remove existing AN/PRC-59	6700-55	
29	**Standardize Installation of .30 Caliber Line Throwing Gun** Establishment of a standard mounting bracket installation for stowage of the .30 caliber line throwing gun	9401-1	1/70
30	**Standardization of Handrails And Standardize Engine Control Cables** Installation of messdeck ladder handrail; Install engine stop control levers ABOVE neutral throttle control levers	1604-3-F	3/70
31	**Body Roller** Install body rollers on gunwales in well deck cockpit		4/70
32	**Transom Seat Locker Securing Device.** Install male and female seat belt buckles on front sides of transom lockers to retain plywood covers and cushions		4/71

33	**Removal of Water Closet.** Installation of portable self-contained toilets, Porta-Potti Model 600 or equal.		4/71
34	**Standardization of Electronic Equipment** Update the following equipment: • AN/SPS-57 Radar/Replaces CRMN3B-3 and CZL-MR-4 Radar. • Polaris Model PS-lOOR, ADF/Replaces Raytheon 355R RDF. • Collins 718V-1B (AN/URC8O(V)1), Replaces AN/PRC-59. PP-6163/U (or equal) • Solid State Inverter/Replaces Kato M.G. Sets. AN/URC-77 (or equal) • Single Side Band/Replaces Karr 222 Transceiver. **Note:** Obsolete by boatalt (44). **Note:** The Collins 718V-1B (AN/URC-80(V)1) has been distributed for installation on those MLB's not equipped with the AN/URC-45 VHF-FM Transceivers. ***Amend(1) Installation of Radar Directional Coupler*** Installation of directional coupler directly to the AN/SPS-57 R/T unit output	6700-55	9/71 11/72
35	**Installation of Electronic Compartment Heaters** Replace 50 amp shore power circuit breaker with 60 amp circuit breaker; Install electric 1000, TP 1250 watt electric heaters in the messdeck and forward compartments, port sides, as high up and as far outboard as possible. SINGER Manufacturing Company, heater Model WJA-12 or equal. Replace existing engine hotstart heaters with heater elements for Model LB-110, 115 Volt, 1500 Watts, Kim Hotstart Manufacturing Co.		2/72

36	**Installation of 1/2" Heavy Duty, Heat-Treated Windshields** Replace existing 1/4" inch windshields with 1/2" inch heat treated windshields.	1203-52 1203-53	6/72
37	**Safety Line Padeyes Installation** Installation of lifebelt "D" ring (padeye) to the outboard sides of the towing bit.		6/72
38	**Load Capacity Increase Of 24 VDC Panel Main Circuit Breaker** Installation of 125 amp DC power main circuit breaker due to peak load operation.	6201-21(alt-G)	6/72
39	**Relocation Of Fuel Oil And Lube Oil Filters** Install lube oil and fuel oil filters to a bulkhead. Reroute fuel supply and return lines to the forward end of the cylinder heads. (With .070 restricted orifice on return line)		11/72
40	**Revision of Portable Fire Fighting Equipment** Relocate existing dry chemical extinguisher to forward bulkhead of messdeck compartment. Install two (2) C02 extinguishers on bulkhead aft of the messdeck compartment ladder.		11/72
41	**Fire Pump Replacement and Standardization** Gorman Rupp fire pump OBSOLETE; Replace with fire pump Model 1595-5, Type L, Pacific Pump Co.		1/73
42	**Replacement of Obsolete Battery Charger** Schawer Battery Charger Type K20032 OBSOLETE; Replace with Model A-40-20-24, La Marche Co.		8/73
43	**Installation of Improved Airborne Noise Reducing Mufflers** Improved mufflers to reduce the airborne noise level ***Amend(1) Installation Of Improved Airborne Noise Reducing Mufflers.*** **Note**: Boatalt 43 to include CG44300-CG44336		10/75 8/76

	Amend(2) Installation Of Improved Airborne Noise Reducing Mufflers Install two (2) muffler system in place of four (4) mufflers to facilitate alignment of new 6" inch exhaust outlet pipes in completion of BOATALT No. 46, Engine Replacement	4103-10-I	9/77
44	**Standardization And Modernization Of Electronic Equipment And Installations** Install the following new electronic equipment: • AN/SPS-57 Radar • AN/SRC-42 SSB Transceiver. • CGG-D33ABA1625 AK (Triton) VHF-FM Transceiver. • CGG-T1671 DC to DC converter w/triton and HA-75 loud hailer. • CDQY-A63-1A DC to AC inverter. • Plastic cover for ID-1244/SON 13 depth indicator). ***Amend(1) Modernization Of Electronic Equipment And Installations*** Installation or removal of the AN/SRC-42(V) OPTIONAL at discretion of District Commander ***Amend(2) Modernization Of Electronic Equipment And Installations*** This amendment cancels BOATALT 44 MLB(S)-44 AMEND 1 and makes the installation of the AN/SRC-42 (V) HF Transceiver system mandatory on 44' MLB's (not applicable to CCGD9 boats) in accordance with COMDTINST M9400.5.	1107-2-L 1702-2-M 6700-7 6700-58 6713-51-A	11/75 10/77 4/82

45	**Navigation Chart Box** Provisions for a Navigational chart table and storage. Accomplishment at discretion of the District Commander ***Amend(1) Navigation Chart Box*** Boatalt classification change; from discretion of District Commander To CLASS A alteration. Standardizes the location and type of chart table on all boats of this class	 2408-1	1/76 12/83
46	**Engine Replacement** Replace OBSOLETE Cummins V6-200M engines with GM 6V-53 engines	1112-4-T 44300-44409, 4103-82 44300-44409, 1112-9 44301-44336, 1112-8 44301-44336 0101-4-A 44300 4103-10? BM19 2200-7-F	8/76
47	**Standardization Relocate Mast, Improve Towing Protection Screen, Improve Nylon Dodger** Locate mast to main deck; Redesign towing screen and frame; Nylon dodger may be installed at discretion of District Commander depending on climatic conditions ***Amend(1) Installation of Stern Tow Lights*** Clarification of installation of the stern tow lights on the mast; Upper tow light to be yellow in color.	1702 1702-3 1702-3	3/76 12/77

48	**Neutral Start Switch for Borg Warner Reduction Gear** Purpose is to eliminate possibility of starting the main engines unless red gear selector valve is in neutral position; Neutral Safety Switch Kit Borg-Warner P/N 71-1A4A. ***Amend(1) Removal of Neutral Starter Switch on Borg Warner Reduction Gears*** Permits the District Commander to exempt certain boats from the requirement for installation of the neutral starter switches.	6201-21(alt-I) none	1/77 3/78
49	**Installation of VHF FM Homer** Installation of the Dorne and Margolin 5E47-7 VHF-FM Homer. DELETES the MF/HF Direction Finder). **Note:** Boatalt 58	6700-7 1702-3 REV.B 6700-58	3/77
50	**Removal of Electrical Cables From Well Deck** Remove electrical wiring from under gunwale cap/reroute cables in well deck void through bulkheads.	6202-9 6202-2	9/77
51	**Modification of Rope Pipe for Anchor Line** Replace existing gooseneck rope pipe with straight pipe; better anchor line handling characteristics.	2605-53	9/77
52	**Installation and Standardization of Fuel System** Installation of remote emergency fuel shut-off valves, individual fuel filter/water separators for each engine, hand fuel priming pumps, and fuel tank suction boxes.	5501-2	12/77
53	**Installation of Spray Rail** Removal of the lower rubber "D" fender; Installation of spray rails to minimize wave plunge and keep deck area dryer.	1202-2	12/77

54	**Installation of Spin-on Filter on The Hydraulic Steering System** Install 10 micron spin-on filter at steering system sump return line. ***Amend(1) Updated Procurement Information for Filter head*** Schroeder Brothers no longer a supply source for filter heads. Boats' using Shroeder filtering units must remove and install proper unit listed in Boatalt. ***Amend(2) Re-Updated Procurement Information*** Lists proper source of supply for filter and filter head.	2200-51	12/77 10/91
55	**Installation of Mast Hoist Tackle** Padeyes, block and tackle, 3/8" nylon line. Padeyes to be installed at the cabin top and on the upper mast area.	1702-3-E	11/77
56	**Relocation of Flashing Blue Light** Relocate the blue light from the mast to the cabin top.	1702-3-E	1/78
57	**Installation of Larger Rudders and Internal Lead Ballast** Increased rudder area by 50% and installation of approximately 2000 pounds of lead ballast weights.	2200-10 2901-3	1/78
58	**Installation of Updated VHF FM Homer (Install AN/SRD-21 VHF-FM Homer.)** **Note:** This boatalt SUPERCEDES boatalt #49.	1702-3 6700-7 6700-58	1/78
	Amend(1) Installation of KDF 538 This boatalt authorizes the replacement of existing VHF-ADF's on the 44'MLB's with the CFHN-IES-KDF-ADF radio. This alteration replaces Boatalt 44MLB(s)-58 in its entirety.		11/96

59	**Standardization of Engineroom Vents And Installation of Engineroom Exhaust Blower** Extends engineroom vents 11" inches forward of bulkhead #15. Exhaust blower for heat dissipation and pending boatalt for HALON 1301 installation.	3801-5	1/78
60	**Modify Helmsman Chair** Strengthens helmsman chair by installing a new carriage assembly with stainless steel runners and new securing bolts, and an improved seat belt securing bracket.		4/78
61	**AN/SQN 13/K Echo Sounding Set Replacement** New and improved Solid State Echo Sounding Set AN/SQN-18X. Relocate to the aft, outboard bulkhead of head area below A.C. Distribution panel.	0103-10-D	4/78
62	**Drop Pump P-140 Support Bracket** Main deck pump stowage location and fabrication of deck ring and pump retaining hardware.	3000-3	5/78
63	**Passenger/Survivor Compartment Ventilation Warning Plate** Locate to inside of passenger/survivor compartment door at eye level; Plate NSN: 9905-01-F78-0131.		5/78
64	**Access Plate for Bilge Inspection, Aft Cabin** Locate to aluminum plating between frames 17-18, port of centerline.	1602-4	2/79
65	**Installation of Cean GLH100 Loudhailer and Relocation of AN/SQN 18X** Unserviceable HA-75 loudhailer; Install GLH-1O0 loudhailer with PA-30 loudspeaker; Relocate AN/SQN-18X R/T unit from engineroom to the starboard sanitation compartment aft of bulkhead #5.		8/80

	Amend(1) Installation of Cean GLH 100 Loudhailer Relocation of AN/SQN 1SX R/T Unit, Removal QE Siren; Siren equipment considered excess to the needs of the Coast Guard. **Note:** Boatalt 25.	6700-58 Rev. C 6700-7, Rev. C 6700-60	11/81
66	**Replace AN/SPS-57 Radar with AN/SPS-66A,** **Install RAYNAV 6000 Loran C Receiver System, Relocation of CGG-T-1670A Power Supplies, (2 Ea.),** **Install 3 Gallon Stainless Steel Water Jug (DWG 1112-56)** Install: • CRP-6000 Nav. rec.-STBD side FWD Cabin, • BLKHD 5, CRP-6000 Rem. Ind.-STBD side Control Console BLKHD. 9, • CRP-6000 Ant. Coupl.- STBD Top of Main Cabin, FR. 7, • RT-1251A/SPS-66A XCVR.-Top Centerline of Cox'n flat FR. 10, • AS-4072/SPS-66A Ant. -Top Centerline of Cox'n flat, • FR. 10, IP1303A/SPS-66A Ind.- STBD side Cox'n Control Console, • BLKHD. 9, CN-1505A/SPS-66A Reg.- Port side FWD cabin OVHD, BLKHD. 5, • Stainless Steel Jug, 3 gallon, NSN 7330-00-721-8499, mounted to adjacent to the head after bulkhead, mounted with spigot over sink; • Relocate power supplies to port side on deck FR. 7 under seat	6700-60 6702-65 1112-56	11/81

67	**Installation of Halon 1301 Fire Extinguishing System And Standardization Of Portable Extinguishers** • DELETES Boatalt #40; • Install halon bottle outboard side under mess deck ladder, • Install 5 lb C02 on inboard side of halon bottle under mess deck ladder; • Install main engine air intake shut-off devices. ***Amend(1) Installation of Halon 1301 Fire Extinguishing System and Standardization of Portable Fire Extinguishers*** Identifies parts changes for proper installation of the Halon 1301 fire extinguishing system	9300-2 Rev B 9300-2 Rev C	5/82 5/83
68	**Removal of Triton VHF FM Remote and Relocation of Several Electronics Equipment** • Remove Triton VHF-FM Remote Control Unit; • Relocate Triton 55/75 XCVR.-Coxswain flat OVHD; • Relocate CEAN-GLH-1O0 Loudhailer,-Cox,n flat OVHD; • AN/SPS66A Antenna,-Relocate 8" FWD of existing location; • Triton VHF-FM Ant.-Relocate to top of mast; • AN/SRD-21 Homer Ant.-Move antenna from top of mast to mid-mast w/bracket fabrication).		6/82
69	**Reduction Gear Modification to Reduce Stalling Problem** Reduction gear selector valve modification and hydraulic accumulator installation		8/83

70	**Installation of Orbitrol Steering System** Deletes mechanical steering gear; Installs: • Hydraulic fluid reservoir, • Hydraulic pressure regulator valve, • Engine driven hydraulic pump, • Hydraulic orbitrol helm pump, • Hydraulic system high pressure hoses, and • Hydraulic steering actuating cylinder ***Amend(1) Installation of Priority Flow Divider into Orbitrol Steering System*** Makes it mandatory for all MLB's to install the "Brand Hydraulics" fixed 8 gpm priority flow divider. It also enlarges the discharge line from the booster pump to a -12.		8/83
71	**Remove of Topside Fire Station** Removes topside fire station 1-1/2" x 50 hose, hose rack, and Navy all purpose nozzle; Relocate equipment to after survivors compartment under starboard side bench seat. Spanner wrench and bracket to be remounted to existing topside fire station aluminum bulkhead at approximately frame 11)		10/83
72	**Removal of Dry Chemical Fire Extinguisher** Removes and DELETES 5 lb PKP fire extinguisher from starboard side coxswain flat near radar shelf		11/83
73	**Removal of Navigator's Seat** DELETE navigator's seat and bracket		11/83
74	**Relocation of Fire Ax** Remove fire ax and bracket from exterior of bulkhead 17 port side. Relocate to inside of after survivors compartment to face of starboard side bench seat		12/83

75	**Removal of Aqueous Film Forming Foam** To be removed and stored ashore and taken on the boat only on cases when its use may be required		12/83
76	**Removal of Deck Plates From After Steering** The depth of bilge beneath deck plates does not warrant a false deck		12/83
77	**Removal of Mess Deck Table** Safety hazard to any one descending the ladder to mess deck in heavy weather		12/83
78	**Removal of Lifting Padeyes** Padeyes are a tripping hazard and are not normally used to hoist the boat		1/84
79	**Chain Locker Void** Installation of 1/8' steel plate over chain locker sump. Fill and drain with rust preventative compound; 26 gallons preservative required)		1/84
80	**Standardization of Electrical Equipment** Upgrade distribution panels, engine starting systems, engine alarm system, engine jacket water heaters, and navigational rotary switch.	6202-10 (Rev. A)	2/84
	Amend(1) Standardization of Electrical Equipment • Wiring change authorization; Battery charger output wiring from 25J-14 to 25J-9; • Wire Halon alarm system to circuit #18; • Remove tach and compass light from circuit #16 and blue light circuit from circuit #14. Add them to circuit #12; • Remove navigation lights from circuit #18, add them to circuit #14; • Remove starboard searchlight from circuit #15, add it to circuit #16; • Remove starboard engine alarm system and starting wiring from circuit #17, add them to circuit #18;	6202-10 Rev. C	7/84

	• Change port cranking motor and starting solenoid to battery terminal block from DSGA-23 to SSGU-50 ***Amend(2) Standardization of Electrical Equipment*** Revision of CG DWG 44MLB(S) 6202-10 to Revision 6202-10 (Rev. D)		8/84
81	**Standardization of Life and Tow Rails And Installation of Handrails** Changes height of forward hand rails; Raises aft compartment exterior hand rail at Bulkhead #17; Installation of hand rails inside of after survivors compartment ***Amend(1) Standardization of Life Rails and Installation of Hand Rails*** Revision to CG DWG 44MLB(S) 1201-55 to 1201-55 (Rev. A)	1201-55	3/84 7/84
82	**Voltage Regulator Replacement** Change to integrally mounted voltage regulator on back side of alternator. This regulator will work only with type B or C alternators. Discontinues the use of the voltage protector P/N 9-14, the reverse polarity protector P/N 9-16, and resistor P/N 17-20 Voltage Regulator NSN 2920-O1-026-0698	6202-10 Rev. C	6/84
83	**CRP 750 Loran C Receiver Installation** • Replaces the CRP-6000-NAV Loran-C Receiver, Antenna, and Coupler. • Relocate CRP-75p Loran-C Receiver to the STBD side, coxswain Control Console, Bulkhead #9. • Relocate CRP-750 Antenna/Coupler to STBD top of Main Cabin Frame #7.	6700-60 Rev A	8/84
84	**Helmsman Grating Extension** Extends grating to allow more room for crew, better field of vision, and improve footing during heavy weather operations. Grating to extend side to side.	1604-5	12/84

85	**Relocate Emergency Tiller Arm** Existing location is a safety hazard to personnel working the well deck area. Relocate tiller and mounting hardware to inside of after survivors compartment at Bulkhead #21		3/85
86	**Step Tread Assembly Replacement** Authorizes replacement of existing steel diamond tread steps with aluminum grating style steps	1604-1 Rev. B 1604-3 Rev. G 1604-6	4/85
87	**Morse Control Head Replacement** Installation of the Morse Control Head Model MD-24, P/N E30590 ***Amend(1) Morse Control Head Replacement*** Federal Stock Number change for the stainless steel adjustable elbow. NSN 2040-00-781-4263	4103-78-E 4103-78-E	12/85 11/87
88	**Standardization of 120 VAC Lighting In Engine Compartment** Install inport fluorescent lighting fixtures in engineroom	6202-3 6202-1O-D	3/87
89	**Shore Tie Connector Replacement** Installation of non-metallic connectors to eliminate electrolysis and potential shock hazard from improper connection of the shore grounding conductor	none	12/87
	Amend(1) Shore Tie Connector Replacement Replaces the Crouse-Hinds shore tie connector with the Hubbel quick lock connector.	None	02/94
90	**Mast Support Relocation** This mast support is separate from the towing screen structure. Eliminates collapsing of towing screen frame when boat strikes bottom during rollover.	1702--2-N 6700-7-C 1205-5 1702-3-F	8/88

91	**Standardization of Safety Belt Attachment Points** Standardizes the attatching points for crew heavy weather lifebelts	1105-3-G 1106-2-I 1107-2-M 1201-55-C. P.10	10/88
92	**Depthsounder Replacement** This changes the depthsounder to a LCD readout 4"x5" depthsounder like the autohelm ST-SO prototyped by NMLBS.		6/90
93	**Visual Identification Modification** This adds "U.S." to the Coast Guard markings on the hull.		5/91
94	**Spin-On Lube Oil Filter Installation** Installation of Spin-On lube oil filters for the 6V-53. Part numbers listed for spin-on filter housing are INCORRECT. Use numbers in BoatAlt 94 Amendment I. ***Amend(1) Spin On Lube Oil Filter*** Installation Corrects part# used in Boat Alt. Part # listed in original 94 incorrect .		10/91 1/92
95	**STLG Removal** This removes the shot line throwing gun from the 44'MLB		8/91
96	**Windshield Defroster System Removal** This authorizes the removal of the windshield defroster system, on hull numbers 44360 through 44409. System was never installed on hull numbers 44300 through 44359.	1203-5 REV H 6202-10 REV D	
97	**Navigation Lights Installation** This Boatalt authorizes installation of new navigation lights and mast brackets, bringing the 44' MLB into compliance with 72 COLREGS as reprinted in *NAVRULES, International-Inland, COMDTINST M16672.2*	1702-3 REV G FL 6405-31 6202-10 REV E	7/92

98	**Hull Zinc Replacement** This Boatalt authorizes the use of bolt-on hull zincs. Studs must be welded to the boat in the existing doubler plate location to accommodate the bolt-on zincs		10/92
99	**Helmsman Chair Pedestal** This Boatalt authorizes the modification of the existing helmsman chair pedestal with stiffener tube and gussets.		11/92
100	**Installation of AN/SPS-69 Radar** This Boatalt installs the AN/SPS-69 Radar (Raytheon 41X)		07/94
101	**Fuel System Upgrade** This Boatalt authorizes installation of spin on secondary fuel filters and moves them to the front of the engine opposite side of the alternators. It also clarifies fuel hose sizes and locations.		11/94
102	**Welldeck Gunwale Enclosure** This Boatalt authorizes enclosure of the welldeck gunwales between frames 15 and 17.	1101-1 REV F 1103-1 REV E 1106-1 REV F	04/95
103	**Engine Air Separator Installation** This Boatalt authorizes the installation of the Walker Air Sep air filtration and oil reclamation system.		05/95
104	**Raytheon NAV 398 DGPS** This Boatalt authorizes the removal of the CRP RAYNAV-750-MKII Loran C receiver on all Coast Guard 44' MLB's and replace it with the installation of the Raytheon NAV-398 DGPS.		06/97
	Amend(1) Authorizes a change to the antenna mounting hardware and the fuse protection wiring for the RayNav-398 DGPS.		06/98
105	**Raytheon 430 Loudhailer** This Boatalt authorizes the installation of the Raytheon 430 loudhailer.		02/98

44' MLB Materiel Checklist

BOAT NUMBER_____

STATION_____

DATE _____

INSPECTED BY_____

References

- 44'MLB Operators Reference Guide, COMDTINST M16114.3 (series)
- Naval Engineering Manual, COMDTINST M9000.6 (series)
- Color and Coatings Manual, COMDTINST M10360.3 (series)
- Rescue And Survival Systems Manual, COMDTINST M10470.10
- MLB & UTB Standardization Program Manual, COMDTINST M16114.24
- PMS Manual TP 2062

Standards

The following inspection standards apply to the 44'MLB's hull, superstructure, machinery, equipment, outfit, and all installed systems and accessories:

- Operates smoothly and correctly.
- Free of grease, oil, rust, and corrosion.
- All fluid levels and pressure readings are within tolerances.
- Protective coatings applied correctly and neatly.
- Free of rips, tears, abrasions, and cracks.
- Labels/test dates/placards properly indicated.
- Outfit and equipment correctly installed/adjusted.
- Outfit and equipment stowed according to specifications and stowage plan.
- Free of non-standard/unapproved installation or equipment.
- Maintained according to current manufacturers guidelines and Commandant directives.

Guidelines

Inspection requires a minimum of two personnel, preferably one Boatswain's Mate and one Machinery Technician, both of whom possess extensive 44' MLB experience and a strong working knowledge of the references listed above. This material inspection checklist is only applicable to boats in a "Bravo" or "Ready for Sea" condition. Each item on the checklist should be judged against the applicable Standards(s) and Reference(s). Additional discrepancies, uninstalled Boatalts, etc. should be listed.

ANCHOR LOCKER	STD	NON-STD	REMARKS
Watertight door			
Anchor line reel brackets			
Hawse pipe plug			
Line; anchor 3" DBN-300 ft.			
Chain, ½ inch BBB 9 ft.			
Shackle, screw pin ½ inch 2 ea.			
Swivel ½ inch 1 ea.			
Thimble ¾ inch 1 ea.			
Bilge **(BA 79)**			
Bulkheads			
Overhead			

Remarks_____

FORWARD COMPARTMENT	STD	NON-STD	REMARKS
Deck hatch			
Ensolite			
Wiring			
Lighting			
Stuffing tubes			
Overhead			
Bulkhead			
Seat cushions			
Seat belts **(BA 32)**			
Inport compartment heater **(BA 35)**			
Underway compartment heater			

FORWARD COMPARTMENT	STD	NON-STD	REMARKS
Hot water piping			
Life jackets, CG approved type I, 7 adults, 3 child.			
Blanket 4 ea.			
Pillow 2 ea.			
Seat compartments			
Battle lantern 1 ea.			
Fire extinguisher 5lb PKP **(BA 67)**			
Dogging wrench 1 ea.			
Deck matting			
Deck			

Remarks_____

FORWARD COMPARTMENT VOID	STD	NON-STD	REMARKS
Deck scuttle			
Bilges			
Overhead			
Bulkhead			
Void pipe plug **(BA 79)**			

Remarks_____

MESSDECK	STD	NON-STD	REMARKS
WTD to fwd compartment			
Battle lantern			
Overhead			
Bulkheads			
Ensolite			
Wiring			
Lighting			
Stuffing tubes			
DC electrical panel **(BA 80)**			
Amp meter			
Volt meter			
Hot cup #1			
Hot cup #2			
Safety belts, 5 ea. on brackets			
Engine operating instructions			
DC converters 3 ea.			
Marine porta potti **(BA 33)**			
Loudhailer			
Engineers tool kit			
First aid kit, 10 man			
Paper towel dispenser			
Fresh water tank **(BA 66)**			
Sink			
Cabinet			
Cabinet drawer			
Flashlight			
Visgage/sample bottles			

MESSDECK	STD	NON-STD	REMARKS
Pyrotechnics			
Signal kit, MK79 2 ea.			
Signal kit, MK124 12 ea.			
Signal kit, MK127AI, as required			
Engineering spare parts			
Electrical/duct tape 1 roll ea.			
Primary fuel filter 2 ea.			
R/W pump cover plate gasket 2 ea.			
Freshwater pump belts 2 ea.			
Raw water impeller			
Alternator belt 1 ea.			
Chow as required			
Void under cabinet			
Sink overboard discharge			
WTD to engineroom			
Portlight on engineroom door **(BA 22)**			
Hearing protection placard E/R			
Emer. fuel stop and labels **(BA 52)**			
Ladder and handrails **(BA 30)**			
Fuel tank sounding tube			
Fuel tank sounding stick			
Fire extinguisher, 5lb PKP **(BA 67)**			
Fire extinguisher, 5lb Co2 **(BA 67)**			
Fixed halon fire ext. system **(BA 67)**			
Halon instruction placard **(BA 67)**			
Fuel vent and fill pipes			
Clock			
Ear protectors 2 ea.			

MESSDECK	STD	NON-STD	REMARKS
HF transceiver AN/SRC-42V			
Cubby hole			
Cubby hole void			
Binoculars			
T-handle wrench/Escape hatch			
Fog horn, mouth operated			
Flashlight with red lens			
Ship's bell			
Spare light bulbs and fuses			
Hand crank for tow reel			
Hand held FM radio			
Chart table (BA 45)			
Charts as necessary			
Nautical slide rule			
Weems, parallel rule			
Dividers 2 ea.			
Pencils as required			
Tide book			
Compass deviation table			
RPM/Speed/Fuel curve			
Search pattern slide rule			
Navigation rules CIM 16672.2 (series)			
Light list and Coast pilot (Local sections)			
Seat cushions **(BA 32)**			
Seat belts **(BA 32)**			
Inport compartment heater **(BA 35)**			
Underway compartment heater			

MESSDECK	STD	NON-STD	REMARKS
Hot water piping			
DC kit			
Seat compartment			
Deck matting			
Deck			
Fuel tank access hatch			

Remarks_____

MESSDECK VOID	STD	NON-STD	REMARKS
Bilge scuttle			
Bilges			
Overhead			
Lead weights and brackets **(BA 57)**			
Bulkheads			
Fuel tank			

Remarks_____

ENGINEROOM PORT SIDE	STD	NON-STD	REMARKS
Stern tube			
Coupling/shaft			
Recirculating system			
Sea chest and valves			
Piping and strainer			

ENGINEROOM PORT SIDE	STD	NON-STD	REMARKS
Air vents ducts **(BA 59)**			
Exhaust piping and lagging			
Exhaust muffler/silencer **(BA 43)**			
Reduction gear **(BA 69)**			
Air receiver			
Air psi gauge and relief valve			
Governor and linkage			
Morse controls			
Air compressor			
Exhaust blower with duct **(BA 59)**			
Raw water system			
Fresh water system			
Fuel system **(BA 39, 52, 101)**			
Gauges with markings **(BA 09, 10)**			
Starter			
Alternator **(BA 82)**			
Heater piping and valves			
Hot start			
Wiring on engine			
Block			
Head			
Exhaust manifold			
Blower flapper valve			
Walker Airsep System **(BA 103)**			
Lube oil system **(BA 94)**			
Engine mounts and framing			
Fire main piping and strainer			
Fire pump and foundation			

ENGINEROOM PORT SIDE	STD	NON-STD	REMARKS
Power take-off unit			
Wiring/brackets fwd blkhd port side			
Battery charger **(BA 42)**			
Electrical outlet 115 VAC. **(BA 19)**			

Remarks_____

ENGINEROOM STARBOARD SIDE	STD	NON-STD	REMARKS
Sluice Valve			
Sluice valve placard			
Stern tube			
Coupling/shaft			
Recirculating system			
Sea chest and valves			
Piping and strainers			
Exhaust piping and lagging			
Exhaust muffler/silencer **(BA 43)**			
Spare 2104 L/O (5 gal)			
Air vent ducts **(BA 59)**			
Reduction gear **(BA 69)**			
Governor and linkage			
Morse controls			
Hydraulic tank and piping			
Steering pump			
Steering hoses **(BA 70 Amend 1)**			
Raw water system			

ENGINEROOM STARBOARD SIDE	STD	NON-STD	REMARKS
Fresh water system			
Fuel system **(BA 39,52,101)**			
Gauges w/markings **(BA 09,10)**			
Starter			
Alternator **(BA 82)**			
Wiring on engine			
Block			
Head			
Exhaust manifold			
Blower flapper valve			
Walker Airsep System **(BA 103)**			
Lube oil system **(BA 94)**			
Engine mounts and framing			
Hot start			
Fire main piping and gauge			
Eductor and piping			
Eductor warning placard			
Oil discharge placard			
Battle lantern			
Hyd relief/flow control **(BA 70 Amend 1)**			
Hydraulic gauge w/valve			
AC elect. panel w/meter **(BA 80)**			
Batteries with hold downs			
Battery trays			
Alarm switches			

Remarks_____

ENGINEROOM GENERAL		STD	NON-STD	REMARKS
Bilges				
Bulkheads				
Overhead				
Fire alarm/temp sensor				
Overhead wiring and brackets				
Halon piping systems	**(BA 67)**			
Lighting (AC)	**(BA 88)**			
Lighting (DC)	**(BA 22)**			
Deck plates				
Step	**(BA 86)**			

Remarks_____

COXSWAIN FLAT		STD	NON-STD	REMARKS
Steering wheel				
Helmsman chair	**(BA 60)**			
Chair pedestal	**(BA 99)**			
Windows				
Shore tie receptacle	**(BA 89)**			
Engine neutral throttles				
Start buttons				
Engine stops				
Morse controls	**(BA 87)**			
RPM gauges w/markings				
Max continuous RPM warning placard				
Rotary switch				

COXSWAIN FLAT	STD	NON-STD	REMARKS
Raytheon Ray-430 Loudhailer			
Instrument lights			
Fathometer **(BA 92)**			
Radar **(BA 100)**			
D GPS **(BA 104)**			
Compass			
Windshield wipers			
Wiper controls			
Air supply piping			
Air horn lever			
VHF-FM Radio			
KDF 538 **(BA 58 Amend 1)**			
Overhead			
Speakers 2 ea.			
Wiring			
Stuffing tubes			
Bulkheads			
Radar pedestal			
Gussets port & stbd			
Snap back screen			
Divers knife			
Safety belt padeyes **(BA 91)**			
Heaving line 2 ea.			
Floatable heaving line			
Vents/screens **(BA 59)**			
Dodgers **(BA 47)**			
Coxswain flat grating **(BA 84)**			
Deck			

COXSWAIN FLAT	STD	NON-STD	REMARKS
Grating supports/kick plate **(BA 84)**			
Water tight door			
Halon reset/inst. Placards **(BA 67)**			
Mast wiring/nav lights **(BA 80,97)**			
Bell bracket on mast			
VHF ADF antennas			
US Flag size 11			
USCG Flag size 5			
Handrails, lifelines, stanchions			
30" ring buoy w/75' Floatable Line 2 ea.			
Float light 2 ea.			
Boat hook 8 ft 2 ea.			
Tow line reel and bracket			
Towing bit			
Towline 3" 600 ft DBN Drop pump support bracket **(BA 62)**			
Pump floatable CG P5			

Remarks_____

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WELLDECK	STD	NON-STD	REMARKS
Steps **(BA 86)**			
Bulkhead			
Deck			
Sea chest vent			
Scuppers			

WELLDECK	STD	NON-STD	REMARKS
Gunwale lip **(BA 102)**			
Well deck life lines			
Watertight door to aft compartment			

Remarks_____

WELLDECK VOID	STD	NON-STD	REMARKS
Bilges			
Lead weights **(BA 57)**			
Hydraulic lines			
Exhaust tube			
Wiring			
Stuffing tubes			
Heater lines			
Scuttle			
Overhead			
Bulkheads			

Remarks_____

AFTER COMPARTMENT	STD	NON-STD	REMARKS
Ventilation warning placard **(BA 63)**			
Ensolite			
Wiring			
Lighting			

AFTER COMPARTMENT	STD	NON-STD	REMARKS
Overhead handrails **(BA 86)**			
Stokes litter			
Swimmers harness w/100 ft line			
Swimmers mask and fins			
Fenders 4 ea.			
Towing flood light and wiring			
Battle lantern			
Emergency tiller **(BA 85)**			
Dogging wrench			
Fire ext. PKP 5lb **(BA 67)**			
EMT kit			
Hand operated resuscitator			
Fire axe **(BA 74)**			
Seat cushions			
Seat belts **(BA 32)**			
Sluice valve			
Sluice valve placard			
Deck			
Deck matting			
Bilge access plate			
Bilges			

Remarks_____

UNDER PORT SEAT	STD	NON-STD	REMARKS
Drogue w/200ft of 2" DBN			

UNDER PORT SEAT	STD	NON-STD	REMARKS
Alongside lines 4 minimum			
Bridle			
Grapnel hook 4lb			
Skiff hook			
Chafing gear			
Assorted shackles			
Underway compartment Heater			
Hot water lines			
Inport compartment heater **(BA 35)**			
Wiring			
Seat compartment			

Remarks_____

UNDER STARBOARD SEAT	STD	NON-STD	REMARKS
Vari nozzle 1 ea.			
Eductor			
In-line proportioner			
Spanner wrenches 2 ea.			
Eductor discharge hose 2 ½" x 25'			
Fire hose 1 ½ x 50' 2 ea.			
Fire hose 1 ½ x 25' 1ea			
Hydraulic hoses **(BA 70)**			
Seat compartment			

Remarks_____

LAZARETTE	STD	NON-STD	REMARKS
Hatch			
Bulkhead			
Rudder posts, packing nuts, set screws			
Hydraulic steering ram			
Light			
Wiring			
Hydraulic hoses **(BA 70)**			
Emergency steering disconnect			
Overhead			
Bilge			

Remarks_____

EXTERIOR, AFT	STD	NON-STD	REMARKS
Taft rail with padeyes			
Towing flood light			
Rudder post tiller caps w/lanyards			
Knuckle bitts			
Stern deck			
Aft compartment deck			
Aft turtle and coaming			

Remarks_____

EXTERIOR FORWARD	STD	NON-STD	REMARKS
Fire main system w/cap & lanyard			
Windows			
Running lights **(BA 97)**			
Blue light **(BA 56)**			
Horn			
Spotlights			
Loud hailer speaker			
FM antenna (port)			
D GPS antenna (stbd) **(BA 104)**			
Radar antenna			
Stuffing tubes			
Wiring			
Bulkheads			
Windshield wiper blade and arm			
Handrails with padeyes **(BA 81)**			
Anchor chocks **(BA 27)**			
Anchor 60lb danforth			
Anchor line plug w/lanyard **(BA 51)**			
Deck			
Bullnose			
Bow Bitt			
Hatch pins and hinge			
HF antenna (port side)			
Fuel fill w/label			
Fuel vent w/label			
FWD turtle & coaming			

Remarks_____

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HULL		STD	NON-STD	REMARKS
Sides/Waterline				
Rub rails	**(BA 53)**			
Spray shield	**(BA 53)**			
Insignia/Numbering	**(BA 93)**			
Safety grab lines				
Exhaust ports				

Remarks_____

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FULL POWER TRIALS

DOCKSIDE TRIALS

PORT ENGINE		STD	NON-STD	REMARKS
Alt/Oil/Temp warning lights				
Alarms w/bell				
Oil pressure				
Water temperature				
R/G oil pressure				
Engine idle speed	750 rpm			

Remarks_____

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STARBOARD ENGINE	STD	NON-STD	REMARKS
Alt/Oil/Temp warning lights			
Alarms w/bell			
Oil pressure			
Water temperature			
R/G oil pressure			
Engine idle speed 750 rpm			
Hydraulic relief 500 psi			

Remarks_____

U/W TRIALS

PORT ENGINE		STD	NON-STD	REMARKS
Oil pressure	40-60			
Water temperature	160-185			
R/G oil pressure	120-160			
Full power	2800 rpm			

Remarks_____

STARBOARD ENGINE		STD	NON-STD	REMARKS
Oil pressure	40-60			
Water temperature	160-185			
R/G oil pressure	120-160			

STARBOARD ENGINE		STD	NON-STD	REMARKS
Full power	2800 rpm			

Remarks_____

Start and Stop Checklist

ENGINE PRE-CHECKS

1. _____ SECURE SHORE POWER AND CABLE
2. _____ ENERGIZED D/C POWER AND LIGHTING
3. _____ INSPECT ENGINEROOM BEFORE ENTERING
4. _____ CHECK BILGE FOR CLEANLINESS
5. _____ SECURE ALL A/C BREAKERS
6. _____ CHECK ALARM/SAFETY SWITCHES
7. _____ OPEN SEA VALVES
8. _____ MACHINERY FLUID LEVELS
9. _____ LINKAGES/BELT DRIVE TENSION
10. _____ PTO DISENGAGED
11. _____ SOUND FUEL TANK (95& CAPACITY)

ENGINE START-UP

1. _____ ENERGIZED D/C START/ALARM SWITCHES
2. _____ THROTTLES IN NEUTRAL
3. _____ ENGINE STOPS/NEUTRAL THROTTLES PUSHED IN
4. _____ START ENGINES INDIVIDUALLY
5. _____ ENGINE PARAMETERS
6. _____ COOLING PIPES/SEA SUCTION
7. _____ INSPECT MACHINERY SYSTEMS
8. _____ ENERGIZE SWITCHES FOR ELECTRICAL/ELECTRONICS
9. _____ ENERGIZE ELECTRONICS AT LOCATION

ENGINE SECURING

1. _____ SECURE ELECTRONICS AT LOCATION
2. _____ SECURE D/C BREAKERS FOR ELECTRONICS AND NON-ESSENTIAL CIRCUITS
3. _____ PULL ENGINE STOPS/SECURE ENGINES
4. _____ SECURE START/ALARM D/C SWITCHES
5. _____ SECURE SEA VALVES
6. _____ INSTALL SHORE POWER CABLE/ENERGIZE SWITCH DOCKSIDE
7. _____ ENERGIZE A/C BREAKERS MAIN/HOTSTARTS/BATTERY CHARGER/LIGHTING
8. _____ INSPECT MACHINERY FLUID LEVELS
9. _____ REFUEL TO 95% CAPACITY!!!
10. _____ ENGINEROOM CLEANLINESS
11. _____ SECURE MAIN BREAKER AT D/C PANEL
12. _____ SET WATERTIGHT INTEGRITY

REMARKS:_____

AUTHORIZED ELECTRONIC EQUIPMENT

FOR THE 44 FT MLB AS OF JAN 98

RAYTHEON AN/SPS 69 RADAR

MOTOROLA MCX 1000 VHF/FM RADIO

RAYTHEON NAV-398 DGPS

RAYTHEON RAY 430 LOUDHAILER

AN/SRC-42(V) HF TRANSCEIVER

AUTOHELM ST-50 FATHOMETER

CFHN-IES-KDF-538 ADF RADIO

For installation and location of equipment, see the appropriate BoatAlt and or blueprint. Electronic technology and equipment is constantly improving and changing. Planned replacement of many of the MLB's electronics preclude adding any operating instructions in this manual. The operator must refer to the appropriate manufacturers operating guide for specific procedures.

Appendix F
44' MLB Disabling Casualties

Overview

Introduction

This appendix contains disabling casualties for the 44' MLB. Refer to Chapter 5, Section A for steps to follow if any of these casualties occur.

In this appendix

The disabling casualties list covers the following subject areas:

Disabling Casualty List

Engine parameters

- Reduction gear pressure below 120 PSI. (engaged)
- Engine lube oil pressure below 32 PSI. (cruising)
- Engine fresh water temperature below 160 degrees or above 205 degrees.

Engineering system components

- Engine fails to start.
- Uncontrollable overheat.
- Metallic/non-metallic noise: metal on metal/fuel-knock/bearing/clicking.
- Excessive shaft or engine vibration.
- Engine surging/over speed (over 50 RPM).
- Loss of engine governor control.
- Reduction gear fails to engage (forward or reverse).
- Fuel oil dilution 2.5 % or above.
- Water in engine lube oil (emulsified white milky oil).
- Lube oil in engine jacket water.
  - More than a light sheen.
  - Floating unmixed lube oil separated from the water.
- Alternator failure.
- Continuous electrical breaker trip.
- Starting batteries won't charge.
- Steering system inoperative.
- Engine motor mount hardware loose or missing.
- Excessive shaft packing leak:
  - Packing while rotating trickle or steady stream.
  - Packing while not rotating more than 15 drops per minute.

Electronic/ navigation

- No electronic means of signaling distress (i.e. no radio etc.).
- Electronics won't energize.

Safety	• Any fuel oil or lube oil dripping* on a hot surface (hot surface is defined as a surface greater than 400 degrees, even if covered by insulation). • Electrical arcing and sparking. • Fixed (Halon) fire fighting system inoperative (pressure below 425 PSI, disconnected, etc.), PLUS no portable fire extinguishers (unserviceable). • Emergency alarms inoperative (fire, bilge, lube oil pressure, high water temp). * To determine if fuel oil or lube oil is dripping, a clean sheet of paper may be placed under a suspected leak to collect and detect any drops that fall
General material	• Hull breach below the waterline. • Inoperative (closed) sea-chest valve.

Appendix G
44' MLB Restrictive and Major Discrepancies

Overview

Introduction

This appendix contains restrictive and major discrepancies for the 44' MLB. Refer to Chapter 5, Section A for steps to follow if any of these casualties occur.

In this appendix

This appendix the following information:

Restrictive Discrepancies

Engine and vessel systems

1. Engine Performance
   a. Maximum RPM (norm 2775-2825) – less than 2775 rpm
   b. J/W Temperature (norm 160-185 deg) – 186-205 deg
2. Leaks more than 15 drops per minute:
   c. Jacket Water
   d. Raw Water
   e. Lube Oil
   f. Hydraulic Oil
   g. Reduction Gear Oil
3. Any fuel drop* falling (onto a surface which is not hot) within (10) minutes.
4. Loose/missing fittings, nuts, bolts, brackets, etc.:
   a. Missing or loose shafting bolts
   b. Battery tie downs missing/loose
5. Fire pump fails to engage/operate at design parameters (norm 100-110 psi).
6. Inoperative/inaccurate pressure/temperature alarms or gauges.
7. Any detectable exhaust leaks.
8. Missing exhaust lagging or system blankets.
9. Failure of any emergency system:
   a. Fuel shut-off valves do not fully close.
   b. Engine blower shutdown is inoperative Fixed bilge eductor system inoperative (i.e. PTO, fire pump, valves)
10. Undersized engine mounting bolts and/or constructed of inferior grade material.

* To determine if a fuel oil is dripping, a clean sheet of paper may be placed under the suspected leak to collect and detect any drops that fall

Boat outfit	1. Fire extinguishers not secured in brackets. 2. Loose/missing fittings, nuts, bolts, brackets, etc.: a. Missing/loose/undersized coxswain chair mounting hardware. b. Mast support bracket hardware loose/missing. 3. Underweight Halon bottle. 4. SAR vests pyrotechnics or strobe lights unserviceable/missing. 5. Boat pyrotechnics unserviceable/missing 6. Portable dewatering pump kit incomplete/inoperative/missing. 7. Towline less than 100' of required length.
Electronics/ navigation	1. Compass a. Deviation table missing. b. Compass deviation over 5 degrees. 2. Electronics a. VHF radio inoperative. b. Depth sounder inoperative. c. DGPS/GPS inoperative. d. Radar inoperative. 3. Navigation light(s) inoperative.
General materiel and safety	1. Water Tight Integrity a. Holes/cracks in a watertight structure. b. Cracks through a watertight scuttle/hatch. c. Failure of a watertight closure to seal. d. Loose dogs/dogging arms on watertight doors/hatches/scuttles. e. Any noticeable gap at gasket seams. 2. BOATALT 57, lead ballast (loose/missing or improper size mounting hardware). 3. Applied non-skid on main decks ineffective/missing (any traffic/working area without non-skid for an 8.5" X 11" area).

Major Discrepancies

Engine and vessel systems

1. Engine performance:
   a. Maximum rpm (norm 2800+/-25) –over 2825 rpm
   b. Reduction gear pressure (norm 120-160 psi) –over 160 psi
2. Leaks less than 15 drops per minute:
   a. Jacket Water
   b. Raw Water
   c. Lube Oil
   d. Hydraulic Oil
   e. Reduction Gear Oil
3. Any fuel leak (piping/fittings/tank) that drips less than one (01) drop within ten (10) minutes.
4. Bilge pump hoses missing hose clamps.
5. Loose/missing fittings, nuts, bolts, brackets, etc.:
   a. Hardware on the engines used for attaching equipment.
   b. PTO locking device missing or allows for accidental engagement.
   c. Battery terminals loose or corroded.
   d. Protective covers for battery terminals not in place..
6. Flexible hoses and gauge lines used for petroleum based products not either fire rated or fire sleeved (fire sleeve properly banded at both ends).
7. Fluid levels below minimum required.
8. Engine guards inadequate/missing around moving machinery.
9. Protruding exhaust lagging securing wire.

Boat outfit

1. Improperly stowed or secured equipment.
   a. Porta-potti not secured to the deck.
   b. Toolbox not secured in bracket with lid secured.
   c. Stokes litter not secured in bracket.
   d. Emergency tiller not secured in bracket.
   e. Fire axe not mounted in bracket.
   f. Water jug mount loose/missing.
2. Hydrostatic testing of fixed/portable cylinders not completed.
3. Fire extinguisher PMS not recorded on equipment tag or improperly completed.
4. Fire hoses past due for hydrostatic testing.

Electronics/ navigation	1. Compass light inoperative. 2. Expired deviation table. 3. Any standard boat electronics, with the exception of those listed on the restrictive list, not operating properly.
General materiel and safety	1. Watertight Integrity a. Improperly filled holes. b. Hardware bolted through a watertight hatch , scuttle, or bulkhead. 2. Sharp, jagged, and protruding edges of engine room bulkhead sheeting. 3. Scuttle not flush with the deck causing a tripping hazard. 4. Inability to open or close doors, hatches, or scuttles. 5. Hatch and scuttle safety locks do not engage when item is in the open position. 6. Missing breaker or open hole in any power distribution panel. 7. Any standard boat machinery or system, with the exception of those listed on the disabling or restrictive lists, not operating properly.

Appendix H
44' MLB Full Power Trial

Overview

Introduction

This appendix contains the full power trial requirements for the 44' MLB to ensure that the boat operates to prescribed standards.

Procedure

Conducting a full power trial

Follow these procedures when conducting a full power trial.

Step	Procedure
1	Prior to starting the engines, attach a reflective strip to the accessory drive pulley or vibration damper for use with a hand-held strobe tachometer.
2	After the engines are started, check the idle speed with the hand-held tachometer. Test all engine alarms from the engine room test panel (inoperative alarms are a disabling casualty).
3	Get the boat underway for a ten (10) minute transit on a relatively straight course. Bring the engine up to full speed.
4	After approximately eight (08) minutes, check engine speed in the engine room with the hand-held strobe tachometer. Normal engine speed range is 2775-2825 RPM.
5	Check for the following abnormalities, which occasionally occur during the full power trial: • Any fuel or lube oil dripping* on a hot surface is a disabling casualty (hot surface is defined as a surface greater than 400 degrees, even if covered by insulation). • A leak from the shaft packing, equivalent to a trickle or steady stream, while rotating is a disabling casualty. • Any leak from the shaft packing, in excess of 15 dpm, while not turning is a disabling casualty. • Any fuel oil drop falling within 10 minutes, not on a hot surface, restrictive discrepancy. • Any anti-freeze, raw water, lube oil, or hydraulic oil leaks greater than 15dpm are a restrictive discrepancy. • Any anti-freeze, raw water, lube oil, or hydraulic oil leaks less than 15 dpm is a major discrepancy. * To determine if drops are occurring, a clean sheet of paper may be placed under a suspected leak for up to ten minutes to collect and detect any drops that fall.

Step	Procedure
5 (cont.)	• Any fuel oil leak on the fuel tank access covers greater than 15 dpm is a restrictive discrepancy. • Any fuel oil leak on the fuel tank access covers less than 15 dpm is a major discrepancy.
6	Check all gauges on the console and record the readings. Refer to the following chart (See figure H-1.) for allowable ranges and results:

Categories	Disabling	Restrictive	Major	Normal	Major	Restrictive	Disabling
Oil Pressure	<32			40-60			<32
Water Temp.	<160			160-185		186-205	>205
Red. Gear Pressure	<120			120-160	>160		
Engine RPM		<2775		2775-2825	>2825		

Figure H-1
Allowable Ranges and Results

7	Return to the mooring. Secure both engines and check all fuel fittings for leaks.